PUBLIC SERVICE COMMISSION OF WISCONSIN
Memorandum

June 4, 2014

FOR COMMISSION AGENDA

TO: The Commission

FROM: Robert Norcross, Administrator
Carol Stemrich, Assistant Administrator
Jolene Sheil, Director, Focus on Energy
Gas and Energy Division

RE: Quadrennial Planning Process II 5-FE-100

Suggested Minute: The Commission directed Gas and Energy Division staff to draft an order in accordance with its discussion.

Background

By Notice dated July 3, 2013, the Commission opened an investigation to evaluate energy efficiency and renewable resource programs (statewide and utility voluntary programs) and to determine their appropriate goals, priorities, and measureable targets. The Commission opened the Quadrennial Planning Process II docket by its authority under Wis. Stat. § 196.374(3)(b)1., which states:

> At least every 4 years, after notice and opportunity to be heard, the commission shall, by order, evaluate the energy efficiency and renewable resource programs under sub. (2) (a) 1., (b) 1. and 2., and (c) and ordered programs and set or revise goals, priorities, and measurable targets for the programs. The commission shall give priority to programs that moderate the growth in electric and natural gas demand and usage, facilitate markets and assist market providers to achieve higher levels of energy efficiency, promote energy reliability and adequacy, avoid adverse environmental impacts from the use of energy, and promote rural economic development.

The Commission's decisions in the first Quadrennial Planning Process covered the 2011-2014 period for the statewide energy efficiency and renewable resource program known as Focus on Energy (Focus) and the voluntary utility programs. The decisions in Quadrennial

Planning Process II will cover the 2015-2018 period for the Focus program only, with no changes for voluntary utility programs.

The Commission's Notice of Investigation (NOI) dated July 3, 2013, sought comments on the appropriate scope of the Quadrennial Planning Process II. Of particular interest were comments regarding which decisions made in the first quadrennial planning process, in addition to the statutorily required decisions, should be revisited, as well as any new issues that should be addressed in the Quadrennial Planning Process II. Decisions made in the first quadrennial planning process are set forth in Attachment A to the NOI. (PSC REF#: 187137.) At its meeting on December 13, 2013, the Commission determined the scope for the second Quadrennial Planning Process. (PSC REF#: 197255.)

In its Request for Comments in this docket (PSC REF#: 197869) dated January 30, 2014, the Commission sought comments on the following five issues:

1. Focus' role in cost-effectively meeting federal carbon standards;
2. Relative emphasis of energy and demand savings;
3. Overall energy goal in lieu of kilowatt-hours (kWh) and therm goals;
4. Rate impact mitigation strategies; and
5. Renewable energy issues.

Comments on each of these five issues was specifically requested either because it is a new issue to the Quadrennial Planning Process (Focus' role in positioning Wisconsin to cost-effectively meet federal carbon standards and establishing an overall energy goal); is related to one of the new issues (emphasis between energy and demand savings and rate mitigation strategies); or has been revisited frequently during the 2011-2014 time period (renewable energy issues). Stakeholders were also invited to comment on other issues included in the scope of the Quadrennial Planning Process II.

Respondents were given six weeks to provide comments. Comments were received from the following ten groups: Clean Wisconsin (Clean WI); Citizens Utility Board (CUB); RENEW

Wisconsin (RENEW); Joint Utilities consisting of the Wisconsin Utilities Association, Municipal Electric Utilities of Wisconsin, and Wisconsin Public Power Inc.; Industrial Customers Group (ICG), consisting of Wisconsin Manufacturers and Commerce and the Wisconsin Paper Council; American Council for an Energy Efficient Economy (ACEEE); Environmental Law and Policy Center (ELPC); Citizen's Energy Task Force; Opower, Inc. (Opower); City of Milwaukee; Sierra Club of Wisconsin; and Save Our Unique Lands (SOUL). In addition, the following three individuals submitted comments: William "Butch" Johnson (Flambeau Papers), Todd Timmerman, and I. Nahm.[1] Comments were also received from the Evaluation Work Group (EWG) which was established by the Commission in the first Quadrennial Planning Process to address ongoing issues in Focus evaluation. EWG has worked throughout the present quadrennium to define appropriate approaches for measuring energy savings and program attribution; provide guidance on Focus evaluation plans; ensure Focus evaluation reports present clear and accurate findings; and review other opportunities for improving the accuracy of Focus' evaluation practices.[2]

This memorandum consists of six sections. One of the Commission's scoping decisions was to address the role of Focus in positioning Wisconsin to cost-effectively meet federal carbon standards. Two other scoping issues, the emphasis between energy and demand and the value of on-peak versus off-peak energy savings, are closely related to the decision on carbon. Therefore, for consistency, these three issues are addressed in Section One (see below). Table 1 below

[1] Appendix A (attached) provides a list with hot links to the comments received.
[2] These comments reflect the consensus of three EWG members: industry expert George Edgar and representatives of the program evaluator and administrator. EWG's utility representative abstains from these comments because her views are reflected in the separate comments submitted by the Joint Utilities. The PSC representative abstains from these comments due to his staff role in conducting quadrennial planning analysis.

demonstrates how a determination to use Focus as a tool to meet federal carbon standards will affect the remaining two issues in Section One.

Table 1 Related Issues in Section One

Related Issues	Use of Focus to Cost-effectively Meet Federal Carbon Standards
Emphasis between energy and demand	Energy savings directly achieve carbon reductions, while demand savings do not.
Value of on-peak versus off-peak energy savings	For carbon reduction, off-peak savings are at least as valuable as on-peak savings.

Section Two specifically addresses five issues related to the cost-effectiveness of programs. These issues are the appropriate (1) cost-effectiveness tests; (2) levelized value of carbon; (3) discount rate; (4) avoided costs (including forecasting of natural gas avoided costs); and (5) approach to determining measure lifetime, degradation, and persistence of savings. A sixth issue, rate impact strategies, is also discussed in this section because it is related to the choice of cost-effectiveness tests. The cost-effectiveness issues are related to the carbon issue as illustrated below.

Table 2 Related Issues in Section Two

Cost Effectiveness of Programs	Use of Focus to Cost-effectively Meet Federal Carbon Standards
Revisit cost-effectiveness tests	The use of cost-effectiveness tests that include the cost of avoided emissions, including carbon, reflect the use of Focus to meet emission standards.
Value of carbon	A carbon value that reflects the Commission's policy objectives for achieving carbon reductions would be consistent with the use of Focus to meet federal carbon standards.
Discount rate	A societal discount rate would be consistent with Focus' role in meeting the societal goal of carbon reduction.
Avoided costs (include natural gas as well as electric)	It is important to continue to improve data and methods to accurately determine cost-effectiveness and document savings that are intended to be part of a plan to meet federal carbon standards.
Approach for determining lifetime, degradation and persistence of savings	

Section Three addresses five other scoping issues identified as priorities by the Commission: (1) the balance between resource acquisition and market transformation; (2) relative

emphasis of business and residential programs; (3) energy-water nexus; (4) whether Focus should receive credit for code changes; and (5) possible pilots for behavioral programs.

Section Four addresses renewable energy issues, including the priorities and guidelines for renewable energy measures and programs and how to evaluate the cost-effectiveness of renewable energy measures and programs.

Section Five addresses two issues which affect budget levels during the quadrennim: (1) approval of the Statewide Energy Efficiency and Renewables Administration, Inc. (SEERA), designated fund; and (2) a plan for allocating undesignated funds.

Finally, Section Six provides a framework to addresses appropriate goals for the 2015-2018 quadrennium and whether the specific kilowatts (kW), kWh, and therm goals should be converted to an overall energy goal. The determination of the appropriate goals in Section Six is highly dependent on the decisions made in Sections One through Five. Because of this, it is appropriate to develop specific goals for the Commission's determination after decisions on issues discussed in Sections One through Five.

SECTION ONE

Role of Focus in Positioning Wisconsin to Cost-Effectively Meet Federal Carbon Standards

In approving this issue as part of the plan scope, Commissioners noted that Wisconsin relies on coal for a significant amount of its generation capacity and stated that the Commission should consider any possible avenue for ensuring the state can meet federal carbon standards set under Section 111(d) of the Clean Air Act. The federal rulemaking process for implementing the carbon regulations has already begun. As part of this process, the Wisconsin Department of Natural Resources, with the support of the Commission and the State Energy Office, sent a letter to the U.S. Environmental Protection Agency in December 2013 with several recommendations for

how federal compliance mechanisms should be designed. The letter recommended that savings from Focus be allowed to count as a compliance mechanism, citing Focus' emphasis on reducing electricity use and its existing efforts to estimate associated emissions reductions. While the Commission stated its support of the concept of the use of Focus savings as a compliance mechanism, the Commission has not determined the extent to which changes to evaluation assumptions and methods and program design should occur to reflect this support. The answer to this overarching policy question drives several other decisions in this docket, namely the relative emphasis on energy versus demand and several of the cost-effectiveness issues discussed in Section Two. In order to implement a policy decision that energy efficiency in general, and Focus more specifically, should be used to the maximum extent possible to meet future federal carbon standards, it is important that other decisions in this and other proceedings support this priority. For example, a decision to substantially increase the fixed charge on customer bills would reduce the cost-effectiveness of efficiency measures from the customer's perspective, thereby reducing opportunities for energy savings and the resultant carbon emissions reductions.

Commission Alternatives

Commission staff developed three alternatives for the Commission's consideration. Alternative One is to determine that Focus should continue to be used as it has in the past, with energy savings as the primary goal, but tracking carbon emissions reductions. If this is the Commission's policy decision, energy savings should be emphasized over demand when establishing goals and a carbon value used for consistency. This alternative is appropriate if the Commission recognizes the role Focus could have in meeting future federal carbon standards, but determines there is sufficient uncertainty regarding these standards that it is not appropriate to make substantial changes to policies and programs at this time.

Alternative Two reflects a larger role for Focus in meeting future carbon standards. Clean WI, CUB, ACEEE, and RENEW all offer suggestions on how Focus programs can play a larger role to cost-effectively reduce carbon emissions in Wisconsin. Clean WI, CUB, and ACEEE state that cost-effective energy efficiency savings are likely to be the most economic option for meeting carbon limits. However, with an annual spending cap of 1.2 percent of gross utility revenues, they believe it is critical that the Commission review program priorities and goals with an eye toward ensuring that Wisconsin can generate the maximum cost-effective energy savings possible to meet compliance standards anticipated for 2020 and beyond at the lowest feasible cost to customers. Clean WI, CUB, and ACEEE also mention that energy efficiency offers numerous monetary and macro-economic benefits in addition to reducing carbon emissions. These benefits include reduced system production costs; avoided investments in generation, transmission, and distribution plants; reduced transmission and distribution losses; creation of jobs; and reduced reliance on imported fuels; and otherwise enhance energy security. While CUB recognizes that states will not have to file implementation plans under the new greenhouse gas rules until mid-2016, CUB believes there is good reason for the Commission to prepare Focus to assist in complying with those rules as part of the Quadrennial Planning Process II. First, the program has already demonstrated cost-effectiveness under the Total Resource Cost Test (TRC) when avoided emissions benefits are not included in the TRC calculations. As such, there is little risk in making such investments in anticipation of federal carbon standards because programs will be beneficial for customers even in the absence of such standards. Moreover, with the statutory cap on annual Focus spending, it may take some time to maximize the amount of savings from energy efficiency programs to allow compliance with federal carbon standards at the lowest feasible cost to Wisconsin ratepayers. Finally, carbon regulations may allow for "banking" of

emissions reductions achieved prior to 2020 for purposes of complying with standards anticipated for 2020 and beyond. If so, investments in cost-effective Focus savings that yield reductions in carbon emissions prior to 2020 would contribute to meeting compliance requirements in 2020 and beyond.

RENEW's comments on this issue were directed toward the potential contribution of renewable energy technologies in meeting federal carbon standards. RENEW states carbon reductions, as affected by Focus, will likely be maximized by offsetting coal electricity generation. All renewable energy resources can play an important role in offsetting carbon emissions. Biogas may be a significant potential source for carbon dioxide (CO_2)-equivalent reductions and rate mitigation because of the potential methane reductions having 22 times the emissions impact of CO_2, which may lead to methane reductions having a greater value in meeting carbon standards.

Alternative Three is appropriate should the Commission wish to use Focus to prioritize other goals, such as lowering demand. For example, if the Commission chooses to place more emphasis on demand reduction than energy savings, fewer carbon emission reductions would be achieved. This alternative is favored by ICG which states that it is premature to make Focus program decisions to address carbon regulations. However, ICG states that, provided that energy efficiency will be an allowable mechanism and Focus implements cost-effective energy efficiency initiatives, Focus should be used to meet federal carbon standards.

Alternative One: The Focus program should continue to be used as it has been to better position the state of Wisconsin to cost-effectively meet federal carbon standards, with energy savings as the primary goal of the program and continued tracking of emission reductions.

Alternative Two: The Focus program should play a larger role in positioning the state of Wisconsin to cost-effectively meet federal carbon standards and program design, and implementation should reflect this goal.

Alternative Three: The Focus program should not play a role in better positioning the state of Wisconsin to cost-effectively meet federal carbon standards and program design, and implementation should reflect other goals established by the Commission.

A. Energy and/or Demand Emphasis

As mentioned above, the decision regarding the relative emphasis between energy and demand savings is connected to the issue of carbon reduction. Therefore, the Commission's decision on the previous issue regarding the role of Focus in positioning Wisconsin to cost-effectively meet federal carbon standards needs to be considered when addressing this issue to ensure decisions are consistent, and Focus is not working at cross purposes. (See Table 1, *Related Issues in Section One*.)

Background

As part of the first quadrennial plan, the Commission determined that the Focus Program Administrator's contract should emphasize energy savings to a greater degree than demand savings. The decision directed that the Program Administrator's energy savings goals be "more aggressive" than its demand reduction goals, and that the emphasis on energy savings also be reflected in the design of the Program Administrator's performance bonus. The relative emphasis between energy and demand savings has important ramifications for program design and implementation. Because this relative emphasis determines the types of technologies that programs promote, equity issues are also a consideration. For example, a program focused on peak kW reductions would not actively promote outdoor lighting as these technologies save kWh,

but result in few kW reductions. An emphasis on peak demand reduction may result in programs for schools being reduced, as these programs tend to achieve low kW savings due to schools not being fully utilized during the majority of the peak season. Additionally, most residential programs achieve relatively lower peak kW savings as compared to business programs because residents are not typically in their homes during peak hours.

When including this issue in the scope, the Commissioners noted the issue was worthy of discussion in light of indications that utilities will be seeking capacity increases in the next five years and the potential need to meet federal carbon regulations. The Commission's decision on this issue should be considered in its goals discussion in Section Five.

Commission Alternatives

Commission staff developed three alternatives for Commission consideration. Alternative One would establish both energy and demand goals, with a greater emphasis on energy savings and resulting emission reductions. By choosing Alternative One, the Commission would be affirming the approach taken during the current quadrennium. This alternative is consistent with the positions of the city of Milwaukee, Clean WI, and CUB who believe that energy savings should still be the primary emphasis of Focus because this would likely result in greater carbon emission reductions. Clean WI indicates that while both energy and demand savings are critical to a carbon-constrained future, an emphasis on energy savings might warrant a higher priority than demand savings because it would likely have a greater impact on carbon emissions. CUB agrees that Focus should continue to prioritize energy savings over demand savings to use Focus' currently limited funds to better assist the state in complying with federal carbon standards.

Alternative Two reflects comments from ICG, the Joint Utilities, and RENEW who all state that equal importance should be given to energy and demand. ICG states that several factors

necessitate that equal emphasis be placed on both. First, both energy and demand help defer power plant construction; therefore, an equal emphasis on both will be beneficial in light of the current situation in which some utilities are seeking capacity for the period 2014-2019. Second, the higher emphasis on energy savings in the past has likely resulted in the unintended consequence of peak demand growth outpacing energy growth. Aside from the need for generation capacity, the higher peak demand growth also results in the addition of expensive transmission infrastructure that is paid for by customers. RENEW states there are benefits to emphasizing both energy and demand reductions, and goals should be established for both. Emphasizing demand would delay or offset new gas-fired generation capacity, and programs highlighting solar photovoltaics (PV) and demand response would be ideally suited for this. RENEW goes on to say that emphasizing energy reductions would delay or offset base load and intermediate-duty generation plants and that all renewable resources contribute to this goal by generating renewable electricity. RENEW states that CO_2-equivalent reductions would be maximized by offsetting electricity produced by coal and capturing methane, a particular feature of anaerobic digesters.

The Commission may want to consider that Alternative Two would result in fewer cost-effective energy savings achieved by Focus due to greater emphasis on measures that capture demand savings. While a greater emphasis on demand savings may result in reduced future infrastructure costs, this would be at the expense of a reduction in energy savings. This would result in a reduction in energy costs avoided and likely result in more costly carbon emission reduction alternatives to meet future federal carbon standards since energy efficiency is the least-cost carbon reduction alternative.

Should the Commission conclude that energy savings, and its resultant carbon emission reductions, are of primary importance and that sufficient demand reductions will accompany these

energy savings in order to meet the requirements of 2005 Wisconsin Act 141 (Act 141) to decrease growth in demand, Alternative Three is an appropriate option. This option is consistent with ACEEE's comments that energy savings should continue to be the primary emphasis of Focus. While energy efficiency and renewable energy programs result in demand savings, demand savings also result from demand response and load management. ACEEE states that the economics and market dynamics work much better to support demand response apart from Focus. The nature of demand response and load management also is best suited for utility administration. The technologies, services, and actions necessary for load management and demand response fall best within utility operations. The utilities are needed to initiate demand response measures through a variety of available options such as price signals, customer curtailments, or load reductions. ACEEE believes that Focus could facilitate and coordinate customer involvement with utility demand response programs and services, but such work should be funded separately from Focus.

Alternative Three has the benefit of removing some of the complexity of setting multiple goals, such as energy savings, demand savings, economic development, emission reductions, customer satisfaction, etc., and the planning efforts to achieve them. The more goals established for the program, the greater the likelihood that none of them will be achieved. Under Alternative Three, achievement of demand savings is not an explicit priority of the programs.

Alternative One: Continue to establish Focus goals based on reductions in energy use and peak demand, with more emphasis on energy use savings and resulting emission reductions.

Alternative Two: Establish Focus goals with an equal emphasis on energy and demand savings.

Alternative Three: Establish Focus goals based on reductions in energy use (kWh and therms), which will lead to emissions reductions and frequently provide demand savings as well.

B. Value of On-peak versus Off-peak Energy Savings

Background

Energy and demand reductions through energy efficiency and renewable energy programs are a cost-effective way to reduce customers' energy bills. Whereas the benefits of off-peak kWh savings accrue primarily to the customer, on-peak kWh savings also include benefits that accrue to all ratepayers by reducing the use of higher-cost peak kWh, improving grid performance and also reducing the capital investment needed for new power plants or transmission facilities.

In recognition of these wider benefits, Focus offers energy efficiency incentives for peak kW reductions when the savings occur during the program's prescribed on-peak hours. Focus offers $125 per kW for custom projects, and on prescriptive projects, the kW incentive is built into the amount offered for each measure. However, Focus incentives for energy efficiency and renewable energy kWh savings do not distinguish between on-peak and off-peak savings. The Commission may want to consider eliminating the kW incentives in favor of a new regime that pays incentives for kWh reductions only, but differentiates between on-peak and off-peak kWh. Reasons to eliminate kW incentives and differentiate kWh incentives by on-peak and off-peak hours include:

a. Focus may produce a larger proportion of on-peak kWh savings and therefore increase benefits to ratepayers.
b. Customers are incented to design and operate renewable energy systems to produce more high-valued on-peak kWh.
c. Commission policy preferences can be expressed efficiently via differentiated incentives for on-peak or off-peak kWh.

d. Focus cost-effectiveness may be improved by increasing rewards for higher benefit on-peak kWh and reducing rewards for lower benefit off-peak kWh.

Analysis

There is little research and experience with the concept of differentiating kWh incentives. Research discovered no examples of energy efficiency or renewable energy programs that differentiate kWh incentives between on-peak and off-peak hours. Discussions with implementers from other states' energy efficiency and renewable resource programs yielded a few insights. Some implementers from other states felt that kW incentives provide sufficient rewards for the wider benefits of on-peak kWh reductions, and that it would be difficult to get the differential kWh incentives correct. The Focus Program Administrator is concerned about the amount of work needed to break out the on-peak and off-peak kWh savings for each of the hundreds of Focus measures. Most Focus staff thought differentiating kWh incentives made sense conceptually, but hoped someone else would be the first to do it.

The conceptual basis for eliminating kW incentives and differentiating on-peak and off-peak kWh incentives is founded on today's much wider and interconnected grid and the present capacity market. Each state's grid was largely independent when energy efficiency and renewable energy programs were first constructed 40-plus years ago. Therefore, it made sense to offer rewards for kW reductions that could reduce the need for new power plants and transmission facilities.

Today, Wisconsin's grid is part of the Midcontinent Independent System Operator, Inc. (MISO), footprint. The benefits from kW savings in Wisconsin do not necessarily all accrue to Wisconsin ratepayers. Commission staff estimated that Wisconsin's power plants supply about 80 percent of Wisconsin's load and are dispatched based on production costs and MISO system needs, not just local needs. MISO presently has more than adequate generating capacity and is

experiencing low demand growth. Future capacity additions may be driven more by retirements and environmental policy than demand growth. Therefore, Wisconsin demand reductions may not produce the wider benefits that are often cited.

Finally, kW reductions are largely a by-product of energy efficiency and renewable energy measures that reduce on-peak kWh use, and will occur without a separate kW incentive. Measures that shift on-peak kWh use to off-peak hours are considered load management measures and are not promoted or incented by Focus because Act 141 does not allow it. While Focus should still estimate, track, and report kW reductions, Act 141 does not require Focus offer direct incentives for kW reductions.

A Focus policy change to eliminate kW incentives and differentiate incentives for on-peak and off-peak kWh may have an acceptable conceptual basis. However, the proposed benefits and costs are not well understood nor quantified in dollar terms. The following paragraphs discuss potential benefits and costs of establishing separate on-peak and off-peak energy savings values.

One potential benefit is a larger proportion of on-peak kWh savings, and therefore an increase in benefits to ratepayers. This benefit has two underlying assumptions. First, it assumes the market, Focus trade allies, and customers will respond to relatively higher on-peak kWh incentives and concentrate on promoting and installing energy efficiency and renewable energy measures that produce more on-peak kWh savings. Conversely, energy efficiency and renewable energy measures that produce mostly off-peak kWh would receive smaller incentives than present, and economic theory suggests that Focus would accrue fewer off-peak kWh savings.

The second assumption is that more on-peak kWh savings will produce greater net benefits. MISO's day-ahead average prices give an indication of the difference in avoided on-peak and off-peak kWh costs. In 2013, MISO's day-ahead monthly prices averaged $37.60 per on-peak

megawatt hour (MWh) and $26.73 per off-peak MWh. These prices show that MISO's on-peak kWh cost is about 41 percent more than off-peak kWh. Avoided on-peak and off-peak kWh costs are likely to have a similar spread, which indicates that there may be opportunity for improved program cost-effectiveness. However, the cost-effectiveness test used by Focus also includes emission benefits. Because off-peak energy savings are likely to come from dirtier base load plants, off-peak energy savings have higher emission benefits than on-peak savings.

Further research is needed to determine the appropriate on-peak and off-peak hours and establish on-peak and off-peak kWh savings for each energy efficiency and renewable energy measure. This will be a large undertaking. However, energy efficiency and renewable energy measures could be grouped into categories for simplicity. Research is also needed to gauge how Focus trade allies and customers will react to relatively higher on-peak and lower off-peak incentives. This research will help determine the impact of differentiated on-peak and off-peak incentives on savings levels. Research would also be needed to develop appropriate avoided cost metrics for on-peak and off-peak kWh savings. If reducing off-peak kWh incentives were a policy priority, it would be simpler to institute bans on certain measures that produce few on-peak kWh savings rather than differentiating between on-peak and off-peak incentives.

A second benefit of differentiating between on-peak and off-peak savings is that owners of proposed renewable energy systems would, in addition to choosing renewable energy technologies more likely to produce energy on-peak, could also be incented to alter their systems' designs and operations to maximize on-peak energy savings. Today, this benefit is largely relevant to projects that convert biogas to electricity that can install biogas storage systems to operate mostly during on-peak hours. However, if battery technology improves and prices fall, other intermittent renewable energy technologies could be impacted.

Presently, the Focus Renewable Energy Competitive Incentive Program (RECIP)[3] allows customers with biogas projects to bid first-year kWh production into the program at a maximum bid of 50 cents per kWh. No kW incentives are offered. Differentiated kWh incentives could be structured to reward only on-peak kWh production. Another possible incentive structure is to provide up to 75 cents per on-peak kWh with a 25 cents per off-peak kWh maximum. Most biogas systems without biogas storage operate continuously, which results in about 60 percent of their kWh production occurring off-peak.

It is unknown how the market would respond to differentiated incentives for Focus RECIP. A Focus Environmental and Economic Research and Development (EERD) research project to be completed in 2014 will report on the technical, economic, and policy issues of biogas storage and on-peak biogas generation. This study will provide much of the data needed to estimate the benefits and costs of biogas storage and on-peak generation as well as offer insights into how differentiated kWh incentives would affect biogas projects.

A third benefit is the potential use of differentiated kWh incentives to express policy preferences. For example, should the Commission place a priority on achieving maximum on-peak kWh savings, the Commission could direct that off-peak kWh receive no incentives. Or if the Commission determined that carbon reductions are a priority, it could direct Focus to set on-peak and off-peak incentives to optimize carbon reductions.

Finally, Focus program cost-effectiveness may improve by differentiating kWh incentives. However, there are not sufficient data to assess this claim. This claim assumes that benefits of on-peak savings are substantially higher than off-peak savings benefits and that the Focus energy efficiency and renewable resource programs can achieve substantially more on-peak kWh savings

[3] RECIP provides incentives for cost-effective renewable energy systems installed at eligible Wisconsin organizations through a competitive request for proposals (RFP) process.

than they are presently without incurring additional delivery costs or negatively affecting program attribution. The MISO day-ahead price difference between on-peak and off-peak energy suggest that avoided on-peak energy costs are substantially higher than the average avoided cost used presently. However, in addition to differences in on-peak and off-peak avoided energy savings benefits, there are also differences between the emission benefits from on-peak and off-peak energy savings. Research is needed by the Focus evaluation contractor to better quantify the difference in these benefits.

A benefit of eliminating kW incentives may be that these incentive funds could be freed up to accomplish other program goals. Again, Focus would continue to track and report kW savings without offering incentives. Some of the dollar savings from elimination of the kW incentives could be used to increase the on-peak kWh incentive. In addition, the Focus contract with the Program Administrator would become more flexible without a set kW goal, particularly if a British thermal unit (Btu) goal is established. With an overall Btu goal, with minimum achievement targets for on-peak kWh, off-peak kWh, and therms, Focus would track and report kW savings, but kW savings would be a by-product of on-peak kWh savings. This change would help facilitate contract flexibility in meeting the overall Btu goal as well as prevent Focus from unnecessarily reducing the program's cost-effectiveness, from the Utility/Administrator perspective (see Table 3), through the provision of higher incentives for certain measures that achieve the kW goal, but do not provide the level of net benefits as incentives spent on other measures.

There would be costs associated with transitioning to differentiated kWh incentives. While dollar amounts cannot be estimated, the transition costs could be substantial. The first step would be to determine the appropriate peak hours and assess existing Focus energy efficiency and renewable resource measures to estimate the amount of on-peak and off-peak kWh savings. Focus

implementers then would need to conduct multiple cost-effectiveness simulations to determine appropriate on-peak and off-peak incentive levels and estimate program cost-effectiveness. The Focus evaluation contractor would need to develop avoided cost metrics for on-peak and off-peak kWh and potentially conduct research on the effects of differentiated kWh incentives on attribution rates. The Cadmus Group (Cadmus) indicated that lower off-peak kWh incentives may affect the attribution of measures that have a high percentage of off-peak kWh savings. Commission staff could develop a budget to conduct this research if so directed by the Commission.

Commission Alternatives

Alternative One: Do not implement differentiated on-peak and off-peak kWh incentives; kW incentives may continue.

Alternative Two: Kilowatt incentives shall be eliminated and differentiated on-peak and off-peak kWh incentives established. The Commission directs Commission staff to develop a plan and budget to implement the changes.

Alternative Three: The Commission directs Commission staff to develop alternatives for Commission approval on implementing differentiated on-peak and off-peak kWh incentives for the Focus renewable energy program. This plan shall be completed three months after the EERD biogas storage and on-peak generation final report is received.

Alternative Four: The Commission directs Commission staff develop a white paper on eliminating kW incentives and implementing differentiated on-pea and off-peak kWh incentives. The white paper shall be presented to the Commission by May 1, 2018.

SECTION TWO

Cost Effectiveness

As mentioned in the introduction, cost-effectiveness decisions need to align with the decision in Section One regarding the role of Focus in cost-effectively meeting federal carbon standards (refer to Table 2, *Related Issues in Section Two*).

A. Cost-Effectiveness Tests

The cost-effectiveness of energy efficiency and renewable energy programs can be analyzed using various different tests. Which benefits and costs are included depends on the perspective each test is designed to capture—that of the community, of utilities, or of the non-participating ratepayer.

Six cost-effectiveness tests have been used by Focus or programs in other states. Table 3 below summarizes the benefits and costs included in each:

Table 3 Benefits and Costs Included in Cost-Effectiveness Tests

	Total Resource Cost (TRC)	Modified TRC	Expanded TRC	Societal	Utility/ Administrator Test (UAT)	Ratepayer Impact (RIM)
Benefits						
Utility Avoided Costs	X	X	X	X	X	X
Reduced Emissions		X	X	X		
Economic Benefits			X	X		
Non-Energy Benefits				X		
Costs						
Program Administration and Delivery	X	X	X	X	X	X
Incremental Costs to Participants	X	X	X	X		
Program Incentives Paid					X	X
Lost Utility Revenues						X

The **TRC test** is the most commonly used cost-effectiveness test nationwide, in part because it takes a general perspective on costs and benefits incurred within the state or utility territory served by the program. The benefits measured are the avoided costs to the utility that result from the program, including the costs the utility would have borne to provide customers with the same amount of electricity and natural gas saved, and to build the additional capacity needed to support the amount of kW-demand saved. The costs include program administration and delivery costs and the incremental costs participants pay for purchasing program-supported products and services rather than their less efficient alternatives. The TRC does not include incentive costs because, from the statewide perspective, they are a cost to the program and a benefit for participants, with no net effect on the state as a whole.

Currently, Focus' primary cost-effectiveness test is a **Modified TRC test.** In addition to the benefits included in the TRC, the modified TRC includes the value of emissions avoided through the program, including CO_2, sulfur oxides, and nitrogen oxides (NO_X). As Focus' primary test, the Program Administrator ensures that the Focus program portfolio is cost-effective under the modified TRC, and the program evaluator annually reports the results of this test as Focus' public measure of cost-effectiveness. In 2013, this test found that Focus achieved a benefit cost ratio of 3.41 to 1 ($3 in benefits for each $1 in costs).

Focus also regularly conducts an **expanded TRC test** that incorporates the economic benefits the program achieves via job creation, increased business revenue, and increased disposable income for consumers. The most recent expanded TRC test found that Focus activities in 2012 achieved a benefit cost ratio of 7.28 to 1, compared to a ratio of 2.89 to 1 under the modified TRC.

The **Societal test** includes all the benefits and costs of the expanded TRC, plus additional non-energy benefits achieved from program activities. These non-energy benefits can include benefits to participants through increased comfort in their homes or buildings, improved health (due largely to the health benefits from reduced emissions), lower product maintenance costs, and increased home or business values. Non-energy benefits may also include broader social benefits, such as reduced risk that utilities and ratepayers will be affected by increased fuel prices. Focus does not currently conduct a Societal test.

While the TRC and Societal tests measure costs and benefits to the community, the **Utility/Administrator test (UAT)** measures only those costs and benefits that directly impact the utilities responsible for program funding and implementation. Benefits include avoided utility costs, while costs capture all administration, delivery, and incentive costs. Because the primary TRC test does not include the incentive costs, the Commission has directed Focus to use the UAT as an advisory test to ensure that incentives for each measure are set at appropriate and cost-effective levels.

Finally, the **Ratepayer Impact (RIM) test** measures the effects of the program on utility rates. It compares the benefits of utility avoided costs, which reduce rates, to program costs and lost utility revenues that result from customers' reduced energy use. Focus currently does not conduct the RIM test.

Several commenters, including Clean WI, CUB, and EWG, state that Focus' current cost-effectiveness tests (modified TRC, expanded TRC, and UAT) are appropriate for continued use. EWG added that, while not quantified, it is likely that Focus achieves the non-energy benefits included in the Societal test. The EWG's statement is consistent with surveys conducted for Focus' 2013 evaluation, in which several participants reported increased comfort, health, and

maintenance reliability as a result of installing program measures. The EWG suggests that the Commission could consider incorporating non-energy benefits into Focus' cost-effectiveness tests in order to provide the most comprehensive view of program impacts. However, the EWG adds that, because non-energy benefits can be difficult and time-consuming to quantify, the Commission should balance the value of including these benefits against the evaluation costs required to accurately measure their value.

The other modification suggested by commenters is to use the RIM test in order to assess the effects of Focus on utility rates. The ICG suggests that the RIM test should be Focus' primary cost-effectiveness test so that only measures and portfolios that achieve a benefit cost ratio of 1 or greater under the RIM test could be adopted. The Joint Utilities suggest adding the RIM test in an advisory capacity. Other commenters oppose the use of the RIM test, contending that the test does not provide a complete or accurate picture of effects on ratepayers for the following reasons:

- The RIM test measures the effects on rates, but not on the bills paid by customers. As a result, it captures the full effects of the program on non-participating customers only, and does not account for the reduced utility charges participants achieve through energy savings.
- The RIM test does not recognize that all ratepayers benefit from the societal benefits measured by other tests, such as reduced emissions and economic growth.
- Including lost utility revenues as a cost does not take into account that those lost revenues are eventually reconciled in the utility's rate base.
- The RIM test measures only the short-term effects on rates. Several commenters state that because it costs less per unit to save energy through efficiency programs than to generate the same amount of energy through any fuel source, investing in energy efficiency can be considered the best option for reducing rates over the long term.

- The RIM test does not provide points of information relevant to a detailed analysis of effects on ratepayers, such as the amounts by which rates increase or the distribution of effects across customer classes.
- The RIM test is rarely used as a primary cost-effectiveness test in other programs (although it is more frequently used as an advisory test).

Commission Alternatives

Commission staff developed four alternatives for Commission consideration. The first alternative maintains the status quo: using the modified TRC as the primary cost-effectiveness test; and conducting the expanded TRC and the UAT as additional tests. This alternative would reinforce the Commission's historical reasoning for using these tests: that the modified TRC provides a statewide perspective for assessing the program's cost-effectiveness; that its limitations for program design are addressed by use of the UAT; and that the Expanded TRC provides valuable information on the program's economic benefits. Maintaining the current set of tests would also provide consistency with historical data and allow efficient analysis of trends in cost-effectiveness over time. Because the modified TRC includes avoided emissions benefits, its continued use as the primary test would be consistent with the use of Focus as a carbon compliance mechanism.

Alternative Two would maintain all three existing tests, but revise the design of the Expanded Test to include non-energy benefits. This option would be reasonable if the Commission believes that Focus achieves these benefits, and that these benefits are relevant for assessing the program's design and performance. The Commission could consider two options for quantifying non-energy benefits. First, it could direct the Focus evaluation team to quantify the value of non-energy benefits in Wisconsin. This would allow these benefits to be measured with as much precision as feasible, but would require additional evaluation expenditures. If the

Commission wishes to consider the effect of non-energy benefits but is concerned about the costs of measurement, it could choose to assign a value to non-energy benefits. Several programs in other states have assigned "adders" equal to 5 or 10 percent of avoided costs and/or emission benefits, reasoning that the costs of further measurement efforts outweigh the benefits to the program of obtaining increased precision.

Alternatives Three and Four address commenters' proposals for use of the RIM test. Alternative Three would establish the RIM test as Focus' primary cost-effectiveness test, while maintaining all three existing tests for informational purposes. Selecting Alternative Three would only be reasonable if the Commission wishes to base program cost-effectiveness solely on its effects on non-participants. Alternative Four would maintain the modified TRC as the primary test, but direct Focus to conduct the RIM test for advisory purposes. This alternative would be appropriate if the Commission wishes to incorporate the non-participating ratepayer perspective into its cost-effectiveness reporting, while maintaining a community-based view for setting program requirements. In assessing whether to use the RIM test, the Commission may also want to consider the presence of other options for assessing Focus' rate impacts. Those options are presented in the next section, and could be applied either in addition to or instead of using the RIM test.

Alternative One: Program portfolios and measures are to meet a modified TRC test of cost-effectiveness. It is appropriate to also conduct a UAT to inform program design, and report results of an Expanded TRC test for informational purposes. Measures that do not pass the modified TRC test but have substantial non-energy benefits may be considered for program inclusion on a case-by-case basis, based on the Expanded test.

Alternative Two: Program portfolios and measures are to meet a modified TRC test of cost-effectiveness. It is appropriate to also conduct a UAT to inform program design, and report results of an Expanded TRC test for informational purposes. Measures that do not pass the modified TRC test but have substantial non-energy benefits may be considered for program inclusion on a case-by-case basis, based on the Expanded test. The design of the Expanded TRC test should be modified to include the effects of non-energy benefits based on:

a. evaluation research conducted by the program evaluator; or
b. 10 percent, or some other value, of avoided energy and emissions costs.

Alternative Three: Program portfolios and measures are to meet a RIM test of cost-effectiveness. The modified TRC test, Expanded TRC test, and UAT should still be conducted for informational purposes.

Alternative Four: Program portfolios and measures are to meet a modified TRC test of cost-effectiveness. It is also appropriate to conduct a UAT to inform program design, and to report results of the Expanded TRC test and the RIM test for informational purposes. Measures that do not pass the modified TRC test but have substantial non-energy benefits may be considered for program inclusion on a case-by-case basis, based on the Expanded test.

A.1. Rate Impact Mitigation Strategies

The prior quadrennial planning process considered increased funding for the Focus program. The Commission also addressed potential rate impacts of the Focus program. Commission staff reviewed previously conducted studies that quantified the rate impacts of energy efficiency programs at various funding levels. Commission staff also conducted its own study to identify potential rate and bill impacts of energy efficiency on Wisconsin electric customers. After considering the results of these analyses, the Commission determined that adopting conservative funding is a significant means of controlling any rate impacts that may be

associated with the statewide energy efficiency and renewable resource programs. In effect, energy efficiency itself is a resource that serves to mitigate rates in the long term by helping avoid or slow future construction of base load generation. The Commission also stated rate pressures would be considered on a case-by-case basis in utility rate proceedings.

When considering rate mitigation as it relates to Focus program funding in this second Quadrennial Planning Process, the issues have changed. As the legislature has capped the funding level at 1.2 percent of gross utility revenue, there will not be any rate increases due to increased Focus funding. In this quadrennial planning process, the focus is whether energy efficiency and renewable resources can be a rate mitigation strategy in regards to compliance with federal carbon reduction standards. As the Joint Utilities indicated, whether energy efficiency and renewable resources can mitigate future rates depends on how their costs compare to other compliance options that may be included in Section 111 (d) state implementation plans.

Commission Alternatives

One option to address rate mitigation concerns would be to include the RIM test in Focus' set of cost-effectiveness tests, either as the primary test for determining cost-effectiveness or in an advisory capacity. Use of the RIM test, and commenters' arguments for and against use of this test, are outlined in the preceding section.

Commission staff offers two additional alternatives that the Commission could select in addition to or instead of conducting the RIM test. The Commission could determine that no additional analysis regarding rate mitigation strategies is needed at this time. This option is also appropriate if the Commission determines that rate mitigation is not an issue in this quadrennial planning process since Focus funding will remain static. This alternative is also appropriate should the Commission wish to take a more holistic view of the role Focus may play in delaying power

plant construction and in positioning Wisconsin to meet federal carbon standards. ACEEE, the city of Milwaukee, RENEW, and CUB believe that energy efficiency programs, when viewed as a resource, are the lowest-cost energy resource compared to supply side options. ACEEE cites studies that suggest energy efficiency is at least one-third the cost of any supply-side option. ACEEE cites to the Pacific Northwest which has invested in energy efficiency for the last 30 years and as a result, since 2005, the region has met increased customer demand through energy efficiency; the net result has been no overall load growth. Energy efficiency in the Northwest is the third largest energy resource just behind coal generation.

Clean WI and CUB believe that increasing levels of customer participation is key to mitigating rate impacts because as more customers participate in energy efficiency programs, more customers will experience the benefits of net bill reductions. Clean WI goes on to say that because of this, the Commission and the Wisconsin legislature should consider increasing program budgets which would increase the portion of customers that experience net benefits from energy efficiency programs.

Because rate designs vary between utilities, the effects of Focus' contributions may impact a customer of one utility differently than a similarly situated customer in another utility. Therefore, if the Commission does wish to further address rate mitigation strategies, it could be most prudent to address those issues in utility rate proceedings. Alternative Two reflects this perspective, establishing that the Commission will consider such strategies on a case-by-cases basis.

Alternative One: No additional analysis regarding rate mitigation strategies is needed at this time.

Alternative Two: Rate mitigation strategies related to Focus contributions will be considered on a case-by-case basis in utility rate proceedings.

B. Value of Carbon Over Time

Focus has historically included the value of avoided carbon emissions as a benefit in its primary cost-effectiveness test. Because no single accepted figure currently exists for assigning that value, the Commission has set the value based on its policy objectives. The current value of $30 per ton was selected by the Commission in the first Quadrennial Planning Process to strike a balance between the two primary sources for valuing carbon: market-based values and the long-term societal value of reduced emissions. Subsequent developments can allow the Commission to reconsider its approach and the values that it could assign using each source.

No markets for trading carbon emission allowances currently exist in Wisconsin. It is possible that a national market could be established under forthcoming federal regulations. At this time, however, it remains uncertain whether regulations would include such a market, or how soon any market would be established. The likely value of permits within the national market is also difficult to project without knowing the level of emission reductions that the regulations will require. Given this uncertainty, programs across the country typically reference two existing markets to identify market-based carbon values. Permits in California's cap and trade program have traded at approximately $11 per ton since the market began operating in 2013. Permits in the northeastern regional market[4] have most recently been traded at values of $2.50 to $3.00 per ton, but a recently implemented initiative to lower the market's carbon emissions cap is projected to increase values above $10 per ton by 2020.

Market prices of carbon reflect the costs to market participants of achieving carbon reductions. Researchers also calculate the social cost of carbon to capture the broader range of societal costs created by carbon emissions, including increased health care costs, environmental

[4] The Regional Greenhouse Gas Initiative regulates emissions in nine states: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont.

damages, and reductions in agricultural productivity. In 2013, a federal working group[5] issued updated estimates of social costs under a variety of modeling scenarios. The moderate scenario, commonly used in federal agencies' benefit cost analyses, estimates a total social cost of $37 per ton in 2015, steadily increasing to over $60 per ton by 2040.

Commission Alternatives

Use of either market-based values or social cost estimates would be consistent with a decision to use Focus as a carbon compliance mechanism. An appropriate value should be based on the Commission's policy objectives for using Focus to achieve compliance. Alternative One sets a market-based value of $15 per ton, which would reflect an emphasis on achieving short-term least-cost carbon reductions. This alternative takes into account current information on market prices and the likely increase in market values over the 5- to 25-year life cycle of installed program measures. Alternative Two provides some flexibility over the assignment of a market-based price. This alternative directs EWG to select appropriate market-based values based on the best information available during the quadrennium, including any information that becomes available regarding a national market. If the Commission's objective is for Focus to reduce emissions on a long-term basis, it could be more appropriate to select Alternative Three, which sets a societal figure of $50 per ton. Finally, Alternative Four maintains the existing value of $30 per ton, which would maintain the existing balance between short-term, market-based values and long-term emission reductions. CUB supports Alternative Four, citing a November 2013 report by Synapse Energy Economics that forecasts a comparable value using a model that incorporates both market-based projections and estimates of social costs.

[5] The group was convened by the Council of Economic Advisors and the Office of Management and Budget, and included technical experts from the U.S. Environmental Protection Agency and the Departments of Agriculture, Commerce, Energy, Transportation, and Treasury.

If the Commission determines it is not appropriate to use Focus as a carbon compliance mechanism, a market-based price would be consistent with methods in place to value other emissions included in program cost-effectiveness tests.[6] Both Alternatives One ($15 per ton) and Two (a market-based value set by the EWG) are appropriate alternatives for choosing a market-based price. Alternative Five, recommended by the ICG, is to set the value of carbon at zero. A zero carbon value is reasonable if the Commission believes prices should be set based on a federal market, which currently does not exist and for which future prices would be difficult to project. This alternative would not be consistent with a decision to use Focus as a carbon compliance mechanism, as a cost-effectiveness test that does not assign a value to carbon would not fully reflect the Commission's policy objectives.

Alternative One: A market-based carbon value of $15 per ton is appropriate, as it reflects current market data and potential future costs of increased regulations.

Alternative Two: A market-based carbon value shall be established. No later than October 2015, the EWG should select a value for the quadrennium that reflects the best available information in market prices, including any price information related to a national market.

Alternative Three: The value of carbon should be based on the total social cost of carbon emissions. An appropriate carbon value is $50 per ton.

Alternative Four: A carbon value of $30 per ton strikes the appropriate balance between the market value of carbon and the value of achieving long-term emissions reductions.

Alternative Five: Carbon should be valued at zero.

[6] Sulfur dioxide and NO_X are both valued using emission allowance prices from federal markets that encompass Wisconsin.

C. Current Discount Rate

Cost-effectiveness tests are designed to identify the present value of program costs and benefits, so that they can inform present-day program decisions. Because the stream of benefits achieved through energy efficiency and renewable energy measures commonly occurs over the future lifetime of installed products, the present value to place on those future benefits must be determined. A discount rate is applied in cost-effectiveness tests to obtain this value. Until 2010, Focus used a real discount rate of 5 percent, under which the value of a future benefit was reduced by 5 percent for each year between the year of occurrence and the base year of the cost-effectiveness test. In the first Quadrennial Planning Process, the Commission reduced the real discount rate to 2 percent, concluding that while present benefits should be valued more than future benefits, policy objectives to achieve emission reductions and a long-term sustainable energy supply justified placing increased value on future benefits.

Three types of discount rates are used by programs across the country. First, some programs use utilities' weighted cost of capital. By capturing the value to participating utilities of all their capital options, using the weighted cost of capital allows direct comparison of the costs of investing in demand-side savings and procuring supply-side resources. Other programs adjust the weighted cost of capital to account for differences in the risk profile of energy efficiency and other capital investments. One primary economic rationale for discounting the value of future benefits is to account for the risk that unforeseen events may prevent those benefits from being achieved. Because many energy efficiency and renewable energy programs are funded through system benefits charges that have low risk of non-recovery and fund installation of measures that have a high probability of achieving a future stream of benefits, some decision-makers conclude that energy efficiency and renewable energy programs should carry a lower discount rate than

supply-side options. A common reference for risk-adjusted discount rates is the interest rate for U.S. Treasury bills, to represent a low-risk investment option.

Another option is the use of a societal discount rate. Some decision-makers select a societal rate based on the rationale that energy efficiency and renewable energy programs reflect a public investment to achieve societal benefits, such as sustainability, rather than a private investment that should be tied to market rates. Societal rates assume that society as a whole discounts future benefits less than individuals or organizations because society places greater value on the benefits that accrue to future generations. Societal discount rates can be set as low as 0 percent, reflecting the assumption that society values present and future benefits equally. Many decision-makers assume that societal rates should reflect society-wide assessments of risk, and use societal rates based on publicly offered investments such as Treasury bill interest rates.

Commission Alternatives

Commission staff developed four alternatives for Commission consideration. Alternative One, a societal discount rate of zero to equally value present and future benefits, is consistent with the use of Focus as a carbon compliance mechanism. This alternative places equal value on present and future benefits. This alternative would also be appropriate if the Commission believes that it is likely that the value of long-term carbon reductions to the state will be significant due to ongoing regulatory requirements and the increasing cost of continued emissions over time. A societal discount rate would also be consistent with the use of a primary cost-effectiveness test that captures emissions and other societal benefits, such as its current modified TRC test, even if Focus is not used as a carbon compliance mechanism.

Alternative Two is to set the discount rate based on utility cost of capital. Under this alternative, a discount rate of 7.5 percent could be established to reflect the weighted cost of capital

in each utility's most recent rate case. Alternative Three maintains the existing 2 percent discount rate, which is generally consistent with the values other states have selected to represent Treasury bill rates. Alternative Three is appropriate if the Commission determines the discount rate should be based on an adjusted utility weighted cost of capital in order to reflect the lower risk of energy efficiency and renewable energy investments through Focus. Alternative Three is also appropriate if the Commission determines that a societal discount rate should be used, but should place greater value on present-day savings. A discount rate of 5 percent, Alternative Four, represents a more limited risk adjustment to utility cost of capital.

Alternative One: Use a societal discount rate of 0 percent in Focus' cost-effectiveness tests.

Alternative Two: Use a discount rate of 7.5 percent in Focus' cost-effectiveness tests.

Alternative Three: Use a discount rate of 2 percent in Focus' cost-effectiveness tests.

Alternative Four: Use a discount rate of 5 percent in Focus' cost-effectiveness tests.

D. Avoided Costs (Electric and Natural Gas)

All cost-effectiveness tests used by energy efficiency and renewable energy programs include the avoided costs to utilities from program energy savings as a benefit. The tests assume that in the absence of the program, utilities would have borne the costs of supplying the same amount of energy and passed those costs along to ratepayers.

In the first Quadrennial Planning Process, the Commission determined methods for calculating the avoided electric energy, electric capacity, and natural gas of energy efficiency and renewable resource programs. The following two sections separately present policy considerations related to electric and natural gas avoided costs.

Electric Avoided Costs

In the first Quadrennial Planning Process, the Commission determined that avoided electric capacity costs would be based on the unit cost of a new peaking plant, and avoided electric energy costs on a three-year historic average of Locational Marginal Prices (LMP) within the state. Concerns subsequently arose that the method for calculating avoided energy costs created two implementation challenges. First, because LMPs primarily reflect current market conditions, the use of historical data to calculate avoided costs was inconsistent with other Commission decisions that valued the achievement of future energy savings. Second, program staff found that the wide variation in historic LMP values over time could continually shift standards for program cost-effectiveness and make it difficult for Focus to offer consistent programming from year to year. After revisiting its decisions regarding avoided costs, the Commission directed the EWG to propose a methodology for calculating avoided electric energy costs based on long-term price forecasts. The Commission's order of June 18, 2012 (PSC REF#: 166932), approved a modified version of the EWG's proposed method. The approved method uses LMP projections developed as part of MISO's Transmission Expansion Planning (MTEP) process to forecast avoided costs over a 30-year timeframe.

Several commenters requested the Commission revisit its methods for avoided electric energy costs. While no objections were made to the use of MTEP's LMP forecasts as a data source, concerns were raised that LMP projections do not fully capture the energy costs avoided through Focus activities.

The LMPs currently used in avoided cost calculations reflect the marginal unit price of electricity at all in-state nodes that inject power into the state utility system, either through generators or connections to the regional grid. These measurements therefore reflect the cost of

fuel and variable production operations and maintenance expense (O&M), as well as the price influences of system losses and grid congestion. LMPs do not reflect fixed costs to the system, such as capital plant costs or fixed O&M, because those costs do not vary on a marginal basis. Fixed costs are instead accounted for and recovered outside the MISO market, via the utility rate base.

Focus' current calculations account for some fixed capital costs in the avoided electric capacity value, which is based on the cost of a peaking plant. However, commenters stated that the exclusion of other fixed costs, particularly those associated with base load and intermediate generation production, cause current calculations to understate the total avoided costs achieved by the program.

The EWG stated that the fixed costs of base load and intermediate load plants should be treated as avoided energy costs, since those capital and O&M costs are used to help lower system energy costs. CUB also commented that base load capacity costs should be included. Although these costs are not incurred on a marginal, per-kWh basis like the variable costs reflected through LMPs, Focus could potentially reduce such fixed costs on a long-term basis if its energy savings allow Wisconsin utilities to reduce the scale of future spending on base load infrastructure additions. Based on preliminary research, Commission staff have identified forecasts of capacity additions developed by MISO through the MTEP process, and forecasts of capital and fixed O&M costs developed by MISO and by the Energy Information Administration (EIA), as sources that could be used to help project applicable costs.

Second, CUB and RENEW both highlighted transmission and distribution costs as a second source of fixed costs that could be incorporated into avoided energy costs. As with fixed base load costs, Focus does not reduce transmission and distribution costs on a per-unit basis, but

could reduce long-term costs if energy savings reduce the amount of infrastructure spending needed within the state. CUB added that including these costs would be consistent with avoided cost calculation methods used by programs in other states. This practice would also be partially consistent with existing Focus practices for calculating avoided natural gas costs which incorporate the costs of transmission. Commission staff have identified MTEP's forecasts of future spending on transmission projects as one potential source for assessing long-run avoided transmission costs. As distribution planning falls outside the primary scope of the MTEP process, MTEP data do not offer options for assessing long-term distribution costs, and preliminary research by Commission staff did not identify any other readily available long-term forecasts. It may be possible to use methodologies used by programs in other states as a reference for development of distribution costs, but Commission staff and the EWG would likely need to adjust those methods to be consistent with Focus' life cycle framework.

Commission Alternatives

In its most recent decision on avoided cost methods, the Commission cited low forecasted future capacity needs in defining electric avoided energy costs based on forecasted LMPs. If the Commission wishes to continue using this method, it could select Alternative One.

If the Commission agrees with commenters' concerns that the current method does not comprehensively incorporate all types of utility avoided costs, it could revise its calculation methods to include values for fixed generation costs, transmission costs, and/or distribution costs. Including some or all of these costs would be appropriate if the Commission believes Focus savings can avoid spending on generation, transmission or distribution projects over the 30-year life cycle of energy savings achieved by Focus, either in the form of new construction or upgrades of existing infrastructure. By selecting Alternative Two, the Commission could specify the

additional costs to be included and direct the EWG to recommend methods for calculating the new costs. These costs could then be reviewed by the Commission and interested stakeholders.

Alternative One: For the purposes of evaluating Focus, avoided electric energy costs will be based on a forecasted LMP that is the average of LMPs across Wisconsin nodes.

Alternative Two: For the purposes of evaluating Focus, avoided electric energy costs will be based on a forecasted LMP and:

a. forecasted avoided fixed costs of base and intermediate load plants;
b. forecasted avoided transmission and distribution costs; or
c. both forecasted avoided fixed costs of base and intermediate load plants and forecasted avoided transmission and distribution costs.

The EWG shall review available data on (fixed costs at base load plants/transmission and distribution costs/both) and recommend appropriate methods to the Commission no later than December 31, 2014.

Natural Gas Avoided Costs

In contrast to the use of forecasts to calculate avoided electric energy costs, avoided natural gas energy costs are currently calculated based on present-day commodity and transmission costs. The Commission chose to include avoided natural gas costs in the scope of this proceeding in order to further review whether it would be appropriate to calculate electric and natural gas costs using consistent methods.

The EWG and CUB submitted comments on this issue. The EWG recommended that avoided electric and natural gas energy costs be calculated using consistent, forecast-based methods. CUB agreed, stating that the rationale that led the Commission to use forecasted electricity avoided energy costs—including consistency with Focus' life cycle savings framework and the avoidance of year-to-year fluctuations in cost values—also apply to the calculation of

natural gas avoided costs. CUB further suggested that it would be consistent with other jurisdictions to forecast natural gas costs based on a combination of market prices for exchange-traded forward contracts and long-term forecasts of commodity and transportation costs.

Because futures contracts tend to be settled on a short-term basis, long-term forecasts may be more consistent with the 30-year life cycle over which natural gas avoided costs are applied. Preliminary research by Commission staff identified the 2014 MISO MTEP report, currently being prepared for release later in 2014, as one potential source for long-term natural gas forecasts. MISO staff have confirmed that its models for identifying transmission and capacity additions will incorporate a 20-year forecast of natural gas prices prepared for MISO through a contract with Bentek Energy (Bentek). The forecast projects average annual Henry Hub prices under multiple growth rate scenarios, similar to the multiple modeling scenarios used to project LMPs. All scenarios project significant annual increases in natural gas prices over the next three to five years, before leveling off to a steadier annual growth rate in the later years of the forecast. Use of these figures would be consistent with the sources used for avoided electric energy costs, and could carry many of the same benefits, including their public transparency, their long-term time horizon, and their status as a pre-existing, staff-reviewed data source that would minimize the additional calculation resources that would be invested by the program. However, their status as a proprietary, privately prepared forecast could limit the ability of evaluation staff to review forecast inputs and verify their appropriateness.

Two other sources for long-term price forecasts were identified. First, EIA's Annual Energy Outlook provides annual Henry Hub price projections through 2040. Use of these forecasts could carry similar benefits to the use of MTEP figures, including their long-term time horizon and their public transparency. As governmentally prepared estimates, evaluation staff may also have

greater ability to review forecast details than they do with the Bentek model. However, upon initial review, Commission staff are concerned that EIA's most recent long-term projections do not adequately account for the current trend towards increased prices. Another option is for the program to purchase other privately-prepared price forecasts. This approach could carry some of the same concerns about proprietary data as the Bentek forecast, but could allow evaluation staff to competitively review and compare different options. Directly purchasing a forecast would also require the program to incur additional evaluation costs.

Commission Alternatives

Alternative One would maintain the current practice of calculating avoided natural gas costs based on present-day production and transmission costs. This alternative would be appropriate if the Commission believes that present-day costs are an accurate source for calculating avoided natural gas costs over the life cycle of Focus measures installed during the next quadrennium.

If the Commission believes it is appropriate for avoided electric and natural gas costs to be calculated consistently, or that it is more consistent with Focus' life cycle framework to use future forecasts, it could direct Focus to base avoided natural gas costs based on long-term price forecasts by selecting one of two additional Alternatives. Under Alternative Two, the Commission could specify the data source that will be used for forecasted prices, as either the MTEP forecast, the EIA forecast, or the purchase of a privately-prepared forecast. Selecting this alternative would be appropriate if the Commission has confidence in the benefits of a specific data source. If the Commission wishes to further study potential forecasting options, it could select Alternative Three, which directs the EWG to recommend alternative methods for review by the Commission and interested stakeholders. This alternative would be appropriate if the Commission believes a final

decision would benefit from further details on the development of the Bentek and EIA forecasts; further analysis of the availability and accuracy of private-purchase options; and/or the identification of other potential sources for forecasted prices.

Alternative One: For the purposes of evaluating Focus, avoided natural gas costs will be based on historical production and transmission costs.

Alternative Two: For the purposes of evaluating Focus, avoided natural gas costs will be based on a long-term price forecast.

a. The long-term price forecast will be based on the natural gas future scenarios produced as part of the MISO MTEP 14 process.
b. The long-term price forecast will be based on the natural gas prices prepared by EIA for its Annual Energy Outlook.
c. The long-term price forecast will based on values purchased from a private firm.

Alternative Three: For the purposes of evaluating Focus, avoided natural gas energy costs will be based on a long-term price forecast. The EWG will review available sources for long-term price forecasts and recommend appropriate sources and calculation methods to the Commission no later than December 31, 2014.

E. Approach to Determining Measure Lifetime, Degradation, and Persistence of Savings

Focus' life cycle savings framework requires the program to project how long each measure will remain in place and operational. The program must also consider whether the savings achieved by a measure can be expected to degrade over the course of its operating life. In the first Quadrennial Planning Process, the Commission decided to use the program's existing practices for life cycle assumptions.

With the EWG's support, program staff made it a priority during the present quadrennium to ensure each measure offered by Focus was assigned an up-to-date Effective Useful Life (EUL) supported by available research. Commission staff, the Program Administrator, program

implementers, and the program evaluation team worked collaboratively to review existing evidence on useful lives for each active measure—including previous Focus research, other research studies, EULs used by other programs, and implementation experience—and reach a consensus judgment on a reasonable EUL for each measure. Where conflicting information was present or reviewers disagreed on the most appropriate value, the evaluation team was authorized to make final judgments, as an independent party with no direct interest in program outcomes. Comprehensive EUL databases were completed in 2013 and are currently used to calculate life cycle savings for all programs.

The EWG has also studied decay rate issues on an ongoing basis. After delaying a decision on the application of a decay rate in 2011 and 2012 while its research continued, the EWG decided in 2013 that a decay rate should not be applied to Focus savings during the present quadrennium because insufficient evidence existed to identify an appropriate decay rate. The EWG found that limited research had been conducted on degradation issues, and that most programs in other states do not use decay rates. The EWG also conducted modeling of the possible effects of implementing a decay rate and concluded that the effects on calculated program savings would likely be minimal. In its comments, the EWG reported that it will continue monitoring available research on degradation. However, the EWG stated that because of the above findings, it did not believe application of a decay rate should be an evaluation priority in the near future.

Commission Alternatives

Commission staff developed three alternatives for Commission consideration. If the Commission wishes to affirm the current approach taken during the current quadrennium, it could select Alternative One. This alternative would continue to use the current EUL approach, delay

application of a decay rate until better evidence is available to identify an appropriate rate, and assign the EWG continued responsibility for monitoring these issues.

Alternatives Two and Three address comments from RENEW and CUB, who did not object to the program's existing life cycle approach, but did suggest it would benefit from increased stakeholder input. Alternative Two would require the EWG to solicit comments from all interested stakeholders before finalizing any full-scale revisions to its existing EUL databases. This would allow Focus to continue using its current research-based process to develop EULs, but permit stakeholder participation to ensure reviews take all considerations into account. If the Commission wishes to explore other options for integrating broader input into the determination of EULs, Alternative Three would direct the EWG to develop and recommend a revised process for determining life cycle estimates during the quadrennium.

Alternative One: Continue to use the current EUL-based approach to document life cycle savings. The EWG shall consider alternatives to the current approach and recommend modifications, including any evidence to suggest an appropriate decay rate can be applied to the program.

Alternative Two: Continue to use the current EUL-based approach to document life cycle savings. The EWG shall collect and review input from all interested stakeholders before finalizing any full-scale revisions to existing measure EULs or application of a decay rate.

Alternative Three: Continue to use the current EUL-based approach to document life cycle savings. The EWG shall develop and recommend to the Commission a process and timeline for determining EULs, and application of a decay rate, that incorporates outside input no later than December 31, 2014.

SECTION THREE

Priorities

A. Balance Between Resource Acquisition and Market Transformation

Energy efficiency programs have been used to accomplish various goals over the last 30 years. In the 1980s when Integrated Resource Planning (IRP) was the norm, energy efficiency programs were used as a resource acquisition tool. Under this approach, energy efficiency is treated as one way to meet projected energy and demand needs, on the same level as coal, natural gas, and other conventional sources of electricity. This approach is designed to encourage utilities to incent customers to use energy more efficiently when they can do so at a lower societal cost than procuring other sources of electricity.[7]

With the advent of utility restructuring in the mid-1990s, IRP fell into disfavor and energy efficiency programs began placing greater emphasis on transforming the energy efficiency market.[8] Market transformation has been defined as "long-lasting sustainable changes in the structure or functioning of a market achieved by reducing barriers to the adoption of energy efficiency measures to the point where ratepayer subsidies are no longer appropriate in that specific market."[9]

Examples of market transformation include:

- Residential gas furnaces in Wisconsin between 1982 and 1996. Utility incentives in the mid-to-late 1980s led to a 90 percent market share for energy efficient furnaces even after the incentives were eliminated.

[7]Ettenson, Lara and Noah Long, *"Market Transformation and Resource Acquisition: Challenges and Opportunities in California's Residential Efficiency Lighting Programs,"* ACEEE, 2010, p. 6-54.
[8] Hoffman, Marc, *"Introduction to Market Transformation,"* CEE, 2011, p. 9.
[9] [9]Ettenson, Lara and Noah Long, *"Market Transformation and Resource Acquisition: Challenges and Opportunities in California's Residential Efficiency Lighting Programs,"* ACEEE, 2010, p. 6-52.

- Energy and water efficient clothes washers between 1989 and 2001. Market acceptance led to ENERGY STAR standards for front-loading and top-loading clothes washers.
- Dishwashers in Wisconsin. Over 90 percent of dishwashers for sale in Wisconsin carry the ENERGY STAR label.

Resource acquisition and market transformation are better described as "strategies" rather than a type of "program." The goals of resource acquisition and market transformation are not mutually exclusive and energy efficiency programs, if well designed and implemented, can achieve both short-term energy savings (resource acquisition) and longer-term market transformation. Market transformation is typically seen as longer-term and the examples above illustrate this point. Most of them were a decade or more in the making. Market transformation efforts seek to create long lasting change in the behavior and/or operations of markets that are important beyond the near-term kWh, kW, or therms saved and in which future interventions require less program resources to buy their way through existing barriers. For example, in one of the three cases above, because over 90 percent of dishwashers in Wisconsin carry the ENERGY STAR label, Focus discontinued incentives for dishwashers. Market transformation strategies can pull more efficient products into the market and thereby speed up the process of market acceptance. The Focus program currently uses three tools to achieve both resource acquisition and market transformation goals: (1) incentives; (2) technical assistance; and (3) education and training.

Commission Alternatives

Commission staff has developed three alternatives for Commission consideration. Alternative One is the current approach, which is to set short-term resource acquisition goals with qualitative targets and direct the Program Administrator to prioritize designs that simultaneously achieve short-term energy savings while targeting longer-term market changes. While this

approach supports the concept of using Focus to achieve longer-term market changes, there are no definitive "goals" to be met and places the primary focus of the programs on shorter term energy savings.

Should the Commission determine it appropriate for Focus market transformation activities to increase to ensure significant ongoing energy savings are achieved, it may wish to choose Alternative Two. Under Alternative Two, performance metrics would be established that reflect specific market development and transformation goals that are in addition to resource acquisition goals. This approach is favored by CUB and Clean WI. CUB stated that both resource acquisition and market transformation objectives are important to the sustained success of Focus and its continued ability to provide economic benefits to Wisconsin ratepayers. CUB stated that Wis. Stat. § 196.374(3)(b)1. requires the Commission to give priority to programs that "facilitate markets and assist market providers to achieve higher levels of energy efficiency." CUB further stated the priorities to support markets and market actors are in effect market transformation priorities and should be reflected in Focus' performance metrics. Thus, to bolster the ability of Focus to meet both long-term and short-term objectives, CUB recommended that the Commission establish performance metrics that reflect specific market development and transformation goals.

The Focus program evaluator has completed a market baseline study, the results of which will be available before the Commission makes its decisions in this docket. If the Commission chooses to establish performance metrics that reflect specific market development and transformation goals, depending on the performance metrics established, progress towards them could be measured against this current baseline. Prior to the baseline study, it was difficult to establish longer-term market transformation goals since adequate data on the status of various markets in Wisconsin was not available. A decision to increase market transformation activities

would need to be considered in establishing the short-term resource acquisition goals. Devoting additional resources to jump-start market transformation activities, while providing more benefits in the long term, may result in lower near-term savings than in the absence of market transformation goals or targets.

Alternative Three places even greater emphasis on market transformation than Alternative Two. Under this alternative, the existing framework for designing programs and setting savings goals would be reevaluated. As the EWG stated, many of the effects of market transformation activities typically occur over a longer timeframe than the one-year and four-periods over which savings are currently tracked. While some market transformation programs (in certain equipment/appliance markets) may generate significant immediate savings, not all valuable market transformation efforts should be expected to do so. For example, removing institutional barriers to residential retrofits due to the market's current failure to incorporate efficiency information into residential real estate listings (such as the Multiple Listing Service) would not be expected to result in significant savings in the near term, but could in the long term. If Alternative Three is chosen, a timeline for specific transformation activities could be developed, with input from the EWG, Evaluator and Program Administrator, that may extend beyond the quadrennium. If this were the case, reasonable metrics for progress would be developed for the quadrennium.

Alternative One: Focus goals should emphasize short-term energy savings. Qualitative targets for long-term market effects over the next four years should be set and the Program Administrator shall prioritize designs that simultaneously achieve short-term energy savings while targeting longer-term market changes.

Alternative Two: Performance metrics that reflect specific market development and transformation goals, in addition to specific resource acquisition goals should be established.

Updates to the recently completed market baseline study should be used to track market transformation goal achievement.

Alternative Three: Performance metrics that reflect specific market development and transformation goals in addition to specific resource acquisition goals should be established. The market transformation goals should be set beyond the next quadrennium to reflect the long-range nature of certain efforts. Updates to the recently completed market baseline study, and other means should be used to track market transformation goal achievement.

B. Relative Emphasis of Business and Residential Programs

Funding for Focus programs currently allocates about 60 percent to business customer classes and 40 percent to residential customers. This is consistent with the historical proportion of Focus funding from each type of customer. Goals for the first quadrennium were set based on past potential studies (2005 and 2009), while also taking into account past program achievement and a review of new opportunities and technologies within each sector.

Commission Alternatives

Commission staff developed several options for Commission consideration. Alternative One retains the current split where 60 percent of Focus revenues are collected from business customers and 40 percent from residential customers. The Focus budget is generally allocated to business and residential programs in this same proportion. This alternative is consistent with CUB's comments that the Commission should retain its current policy directive that "goals and targets should be allocated between the residential and business programs according to the measured potential in each." CUB defined measured potential as all cost-effective energy efficiency potential. CUB also stated that the Commission should apply a secondary criterion that limits the extent to which one sector can subsidize efficiency in the other, meaning that if the

residential ratepayers contribute 40 percent of the Focus funds, then investment in residential programs should be approximately 40 percent of the budget.

Prior to 2012, there was a significant deviation in program funding from the targeted 60 percent business and 40 percent residential. After a new Program Administrator took over in early 2011, Focus programs were redesigned and rebid in part to increase residential program offerings. As a result, beginning in 2012, the Residential Portfolio offered several new programs, such as Appliance Recycling and Express Energy Efficiency, for customers who wanted a more step-by-step approach to efficiency rather than a whole house approach. Business Programs were also rebid the last quarter of 2011 and the first quarter of 2012 to increase participation in previously underserved markets, such as Small Businesses. As Table 4 indicates, after the new programs became established in 2012, the expenditures for residential programs (an indication of participation) rose from 31 percent in 2011 to 38 percent in 2012. In 2013, residential programs made up 43 percent of total program expenditures, with business programs accounting for 57 percent of program expenditures. However, verified energy savings and kW reductions do not always mirror the expenditure percentages. In 2012, business programs accounted for 77 percent of kWh savings, 70 percent of kW savings, and 77 percent of therm savings. In 2013, business programs accounted for 55 percent of kWh savings, 62 percent of kW savings, and 79 percent of therm savings. In addition, although the benefit cost ratio for residential programs has increased, it is still less than business programs due to economies of scale with larger projects in the business sector.

Table 4 Business and Residential Expenditures and Energy Savings 2010-2013

	% of Total Expenditures	% of Total kWh	% of Total kW	% of Total Therms
2010 Business	68	80	80	85
2010 Residential	31	20	20	15
2011 Business	69	83	75	75
2011 Residential	31	17	25	25
2012 Business	62	77	70	77
2012 Residential	38	23	30	23
2013 Business	57	55	62	79
2013 Residential	43	45	38	21

The Commission may wish to defer its decision on the appropriate allocation of funds to the business and residential programs until it makes a decision regarding the use of the unallocated funds (see Section Five–Budget). This is because one or more of the alternatives would allocate funds to Business programs only, and therefore, if selected, could slightly widen the Business-Residential split.

If the Commission determines that the appropriate allocation of funds to business and residential programs is significantly different than the current 60/40 percent split, it may be appropriate to reexamine the collection of the dollars. The Commission could specify the appropriate collection of the Focus contributions in this docket. Alternatively, this can occur during utility rate cases.

Commission Alternatives

Alternative One: Sixty percent of Focus funding shall be allocated to business programs ratepayers and 40 percent to residential programs.

Alternative Two: Choose a different formula for allocating Focus funding to business and residential programs.

Additional Option A: *Specify the collection of Focus funding to the business and residential rate classes for rate-making purposes.*

Additional Option B: *Determine the appropriate collection of Focus funding to the business and residential rate classes in utility rate proceedings.*

C. Energy-Water Nexus

Background

Traditionally the water-energy nexus encompasses two areas: (1) the energy involved with supplying water to and treating wastewater from homes and businesses; and (2) water being supplied and used in energy production. Issues germane to Focus are encompassed in the first topic area; therefore, water used in energy production will not be addressed.

Large amounts of energy are used to supply water to homes and businesses and, in most cases, treat the wastewater. Since inception, Focus has recognized the water-energy nexus and has offered cost-effective programs that produce "direct" water-related energy savings. These programs provide incentives for: (1) energy efficiency measures at water supply and wastewater treatment facilities; (2) helping customers heat or pump water more efficiently; and (3) installation of water saving measures that reduce the use of heated water.

Reducing customers' water use also leads to "indirect" energy savings because less water is being supplied to customers and less water may be treated by at the wastewater treatment facility. Focus does not claim energy savings that occur upstream or downstream from the customer site, and Act 141 does not address the issue. Because Focus does not claim embedded energy savings in water consumption and treatment, its ability to offer adequate incentives for some measures in the water-energy nexus and to cost-effectively participate with water efficiency programs offered by water utilities or cities with water saving goals is limited.

Focus presently estimates and tracks the amount of water saved by various energy saving measures in the SPECTRUM database.[10] The water data are aggregated for reporting purposes by the Commission's Division of Water, Compliance and Consumer Affairs.

Analysis

There is limited experience in other states with energy programs claiming and evaluating indirect energy savings from water saving measures. The California Public Utilities Commission (CPUC) has made the most progress. Beginning in 2007, the CPUC has undertaken extensive research on the full scope of the water-energy nexus. The CPUC authorized nine pilot projects ($2.8 million) in which electric utilities partnered with water utilities to deliver water saving measures targeted at specific customer groups.

The pilots' impact evaluation found some of the programs to be very cost-effective, whereas others were not. CPUC Decision 12-05-01 stated it is "not prudent to spend significant amounts of [energy] ratepayer funds on expanded water-energy nexus programs until the cost-effectiveness of these programs, and particularly the net benefits that accrue to energy utility ratepayers, are better understood." CPUC staff are developing a calculator that estimates avoided costs for energy utilities and water agencies from water conservation. In addition, utilities are piloting additional programs, including water leak detection and repair, which may help inform CPUC on energy savings from water conservation. In December 2013, CPUC opened water rulemaking proceeding R13-12-011 on policies to promote a partnership framework between investor-owned utilities (IOU) and the water sector to promote water-energy nexus programs.

[10] SPECTRUM—The State Program for Energy Customer Tracking, Resource Utilization and data Management (SPECTRUM) is a comprehensive customer relationship management based system for managing and tracking customer service, applications, energy savings, incentives, budgets, expenditures, and marketing efforts.

California's pilot programs' lack of cost-effective energy impacts may be traced to the extremely broad scope of their water-energy effort, limited participation in the pilots, difficulty in coordination between electric and water providers, and a focus on water savings rather than targeting known, large water users with high energy impacts.

Focus Water-Energy Nexus

Wisconsin is able to estimate the upstream and downstream energy impacts of reduced water use with actual data from Wisconsin water and wastewater utilities. Commission staff annually compile water supply data, such as energy use and total gallons pumped, for each Wisconsin water utility. The energy use of wastewater plants can be estimated using a Focus-sponsored survey that benchmarked Wisconsin wastewater treatment facilities by type and size. The survey data provide estimates of the average kWh of energy use per thousand gallons of wastewater treated for all types and sizes of Wisconsin wastewater facilities. These data could be used to develop the algorithms that estimate the amount of energy embedded in water in Wisconsin. The amount of upstream and downstream energy savings that could be claimed by Focus is not known since evaluation metrics have not been developed. However, several large industrial projects that save thousands of gallons per day are approved by Focus each year, and thousands of small residential measure are installed annually.

The SPECTRUM database automatically tracks water savings by prescriptive measures that save water. With custom measures that save water, the amount of water saved is presently entered manually along with the energy data. Prescriptive measures with water savings would need to have their energy saving profiles adjusted to include upstream and downstream energy savings. This would take a small amount of Focus staff time. New measures would need to be developed as partnerships with water utilities are developed. The amount of labor for custom

measures would not be affected. Some industrial custom projects reduce water use by millions of gallons per day. These custom projects would calculate the upstream and downstream energy saving from the water reduction and thus be able to offer a larger incentive to the customers.

Wisconsin may be able to avoid most of the cost-effectiveness issues experienced by the CPUC pilots by limiting the scope of water-energy nexus efforts and targeting the most cost-effective measures. Existing Focus cost-effectiveness methods can be used to target measures that save large amounts of water and therefore relatively large amounts of energy savings. Focus could also partner with Wisconsin water utilities that offer water conservation programs to reduce program delivery costs. The CPUC pilots targeted water savings and attempted to estimate the energy saved. A Focus program would concentrate on gaining more cost-effective energy savings from measures and projects that save energy and water.

Anaerobic pretreatment (AP) systems are an example of a technology that would benefit from Focus being able to claim downstream energy benefits. Many beverage, milk, cheese, and other food processors send their wastewater directly to an aerobic wastewater treatment facility, which uses a large amount of electricity to destroy the organic matter in the wastewater. An AP system is a small anaerobic digester designed to break down about 60 to 80 percent of the organics and produce biogas. The remaining 20 to 40 percent of the organics are sent downstream to the aerobic system, where much less energy is used. Presently, Focus provides a renewable incentive for the biogas production, but the owner of the AP system is not rewarded for reducing the electricity use downstream at aerobic system. There are other measures that reduce the amount of water used at food and beverage processors and other customers that would qualify to higher incentives if upstream and downstream water-related savings are claimed by Focus.

Commission Alternatives

Alternative One: Focus may claim energy savings and offer incentives for water saving measures that also reduce the energy involved with supplying water to and/or treating wastewater from homes and businesses. By December 31, 2014, Commission staff shall develop guidelines for Focus and voluntary utility programs to estimate water-related energy savings.

Alternative Two: Focus shall not claim savings nor offer incentives for water saving measures that also reduce the energy involved with supplying water to and/or treating wastewater from homes and businesses.

Alternative Three: Commission staff shall develop a white paper that details how Focus may claim savings and offer incentives for water saving measures that also reduce the energy involved with supplying water to and/or treating wastewater from homes and businesses.

D. Should Focus Receive Credit for Code Changes?

Background

Residential and commercial building codes have three distinct functions for energy efficiency programs. First, building codes serve as the minimum or baseline energy efficiency levels that efficiency programs use when estimating the energy saved in buildings by various measures such as the building shell, heating, ventilation and air conditioning systems and lighting. A second function of building codes in energy efficiency programs is their role as a backstop for energy efficient measures or building practices that, via program efforts, have become standard practice in the marketplace. Over time program incentives, technical assistance, and marketing help the marketplace adopt and widely accept these measures. At the point these measures and practices become standard practice, actively updating building codes to be consistent with standard practice eliminates the need to continue incentives for these measures. The code upgrade ensures

that the marketplace does not backslide to a lower efficiency level for the measure or practice and thereby negate some of the investment the program made to transform the market.

Energy efficiency programs can also use building codes as a low-cost source of energy savings. There are two categories of efforts generally used by states with active energy efficiency programs that address building codes. Program staff can be actively involved with code development to ensure easy to adopt, cost-effective measures are incorporated. A second category addresses code compliance. The program can provide assistance to ensure builders understand building codes, know building techniques that comply with the codes, and have the skills to readily adapt to updated codes. Focus presently does not actively engage in code upgrades nor does Focus offer builders assistance with code compliance.

Currently, Focus cannot count energy savings from code enhancements. Focus implementers presently perceive code upgrades as a threat because their energy saving goal achievement is made more difficult as the efficiency level of the baselines rise. Programs that are allowed to claim energy savings from code changes they have influenced have removed this disincentive to program implementers and turned it into an area to be mined for low-cost energy savings. Regulators in other states have seen these dynamics and have allowed their programs to receive credit (kW, kWh, and therms) for program-led building code upgrades and in some instances, improved code compliance.

Analysis

Regulators in other states have taken varying approaches to achieving energy savings via building code programs. However, the programs share the three core initiatives of base code compliance assistance, base code upgrade (also known as “stretch” codes), and stretch code

education and compliance assistance. In most cases the programs are run by one or more utilities working cooperatively to ensure consistency and reduce duplication of effort.

Experiences in Other States

California's codes and standards program is the largest and most developed of all state programs. Its programs include stretch code development and compliance assistance as well as an appliance efficiency standards program. California is unique in that its economy is large enough to support separate standards, and it has federal permission to exceed national efficiency standards.

In 2006, Cadmus, a company that provides energy efficiency planning, design, and evaluation services, was hired by CPUC to develop formal protocols and methods for estimating energy savings from utility involvement in code and standard upgrades and compliance. A savings potential study conducted by Cadmus found that California's codes and standards program could produce 20 to 30 percent of the state's portfolio of energy savings at a benefit cost ratio of 20-1, based on the Program Administrator/Utility Cost Test. Standards initiatives were expected to produce over half of the energy savings. Cadmus indicated that existing code compliance in California is high, so stretch code and compliance assistance programs could reasonably be expected to achieve only 8 to 10 percent of a utility's required annual energy savings goals. States with lower existing code compliance levels could expect greater savings in the first years of their code compliance assistance programs.

The Arizona Corporation Commission requires that a minimum of 22 percent of IOU energy savings come from code programs by 2020. The legislation allows IOUs to claim a maximum of 33 percent of their energy savings goals from code programs. IOUs must demonstrate that the savings occurred, provide evaluation data, and provide evidence that their

actions led to the claimed savings. Most Arizona utilities are working together to develop programs.

The Minnesota Department of Commerce is currently involved in a stakeholder process with utilities in Minnesota to identify where utilities can support code compliance and claim energy savings as a result of this support. The Commerce Department's Division of Energy Resources will provide oversight of utility programs as they develop as well as conduct code compliance analysis and determine program attribution levels. Minnesota's 2007 Next Generation Energy Act set energy savings goals for utilities and allowed utility code programs to receive credit for energy savings.

Oregon's legislature mandated in 2009 that the Buildings Code Division develop a statewide uniform Reach "stretch" Code in parallel with the regular three-year updates to the base Oregon Energy Efficiency Specialty Code (OEESC). The first Oregon Reach Code was effective July 1, 2011, and is an "alternative compliance path" to the OEESC.

Massachusetts is developing a framework for utility energy code initiatives. In 2011-2012, Massachusetts' utilities completed a baseline study of commercial building energy code compliance and a two-part residential building energy code compliance study. The residential studies show code compliance rates of over 90 percent for stretch code and ENERGY STAR Homes, and compliance rates of over 80 percent of homes built to base code. Massachusetts is a home-rule state so the more than 350 municipal jurisdictions must separately approve building code updates. About 130 municipalities have adopted the the state-approved stretch code.

Wisconsin Base Energy Codes

Wisconsin has residential and commercial building energy codes that are mandatory statewide. These codes are issued and administered by the Wisconsin Department of Safety and

Professional Services (SPS). SPS conducts building plan reviews and building code enforcement for the entire state except for three cities, Madison, Milwaukee, and Janesville, which conduct their own building plan reviews and enforcement.

Wisconsin Energy Code Compliance

A U.S. Department of Energy (DOE) study conducted in 2010-11 found Wisconsin's new commercial buildings to be about 90 percent in compliance with existing code. The study examined 44 new commercial buildings for code compliance. DOE's caveat is that study results should not be used to generalize to the state's population of commercial buildings. The study did not estimate the energy impacts of the ten percent of items that were out of compliance, nor was code compliance for residential buildings or renovations of commercial buildings investigated. Focus implementers who serve customers with commercial buildings indicate that they routinely see items that are not compliant with code, but do not report the violations out of fear that the customer will stop working with them on other efficiency projects.

No studies have been undertaken for residential code compliance in Wisconsin. Residential code compliance is notoriously difficult to measure because remodeling projects make up the bulk of the activity, and permits and plans are often not filed or available. There are not enough data to determine if there are worthwhile potentials for energy savings from code compliance assistance in Wisconsin

Wisconsin Stretch Code Efforts

SPS is working on updating parts of Wisconsin's commercial building code. No schedule is available for enactment of the updates. Interaction between Focus implementers and SPS is limited; however, SPS has shown interest in working with Focus on stretch code development. The Focus EERD program awarded a grant in 2013 for a project to identify potential stretch code

upgrades in commercial buildings that are easily implemented, low-cost, and offer cost-effective energy savings. This study will be completed by December 2014. Most potential stretch code changes would require more efficient equipment, building materials or practices. The EERD study will identify those that have low costs and high impacts.

Advantages of Energy Codes Program in Wisconsin

There are three main reasons for energy efficiency programs to undertake code development and compliance initiatives. First, there is documented evidence in other states that energy-related building code compliance is not well understood by builders, nor always well enforced by building inspectors. This is particularly true in states with many cities that do their own building code enforcement. Wisconsin has only three of these cities.

Additionally, according to Focus implementers, substantial energy savings are being missed due to commercial building renovations not fully complying with existing code. Since building codes affect all new buildings, and most retrofits, there is the potential for large lost energy savings opportunity statewide when building codes are not followed. These energy saving opportunities are considered "lost" because the cost to upgrade to high-efficiency equipment after the retrofit has been completed is often too high or even impossible in some cases.

Secondly, code initiatives have proven to be very cost-effective. The energy saved via code initiatives generally cost about one-tenth of the energy saved by tradition efficiency program on a cents per kWh basis. Code initiatives do not require the payment of incentives. Most program implementers have staff who can offer code-related education and technical assistance to customers. Resources needed to work on code development are minimal, generally requiring a part-time effort for one or two people. CUB indicated that an energy code initiative could yield cost-effective savings for Focus.

Finally, code initiatives help traditional programs "close the book" on energy savings measures for which the program transformed market. Code upgrades allow a program to put itself out of business for measures that are widely accepted by buyers and sellers. Code upgrades allow the savings targeted by traditional programs to be locked in by code. This allows the traditional programs to target its incentives to new, higher-efficiency measures, target additional customer groups, or reduce their budget. Without savings being locked in by code, program implementers are motivated to keep offering incentives for measures until the program attribution is so low that the measures are no longer cost-effective. Then once the program stops offering incentives, the market can backslide to a lower efficiency measure, thereby losing some of the investment made to transform the market.

Risks of an Energy Codes Program in Wisconsin

There is little information on risks of code initiatives. However, staff has identified several potential risks. As the first state to fully research, develop and implement formal protocols and methods for estimating energy savings from code initiatives, California expended substantial resources. Wisconsin has the advantage of being able to leverage this previous work by adapting California's methods to make them relevant to Wisconsin.

There is also a risk that customers could begin to see Focus implementers as regulatory enforcement personnel if they become involved with code compliance assistance. This could damage the Focus brand, which is based on unbiased, professional advice without regulatory risk.

A final risk of launching a code initiative is that the level of expected energy savings potential is unknown. There is a risk that the energy savings potential from a Focus initiative for building code assistance and stretch code development assistance may not yield cost-effective savings. This could occur if it is found that Wisconsin has high residential and commercial code

compliance and that SPS has been very active in incorporating stretch codes for high energy use measures. If the risk is thought to be large, a potential study could be helpful.

Commission Alternatives

Alternative One: Focus shall develop and initiate a building code program including one, two, or all of the following:

- An existing base building code compliance assistance initiative
- Stretch code development
- Education and compliance assistance initiative for stretch codes

Alternative Two: The Commission does not have sufficient information and directs Commission staff to develop a plan and budget for determining the potential for a Focus building code initiative that includes an existing building code compliance assistance initiative and a stretch code development, education and compliance assistance initiative.

Alternative Three: Focus shall not devote resources to building code initiatives.

E. Pilots for Behavioral Programs

Focus' current programs achieve energy savings by offering customers financial incentives, along with technical assistance, to purchase energy efficient and renewable energy products and services. This model of influencing customers' economic decisions has historically been standard in programs across the country. In recent years, however, an increasing number of states and utilities have expanded their portfolios to include behavioral programs that seek to change customers' habits and motivations by enhancing their awareness of their energy use, providing them with more information on how to reduce their energy use, and using social influences to motivate them to save energy. In recognition of this trend, the Focus Program Administrator has

suggested that the Commission set aside a portion of annual budgets for pilots to assess whether behavioral programs can serve as a cost-effective component of the Focus portfolio.

Behavioral change for non-residential customers in Wisconsin have been primarily addressed through Strategic Energy Management (SEM) programs. SEM programs or energy manager programs seek to promote operational, organizational, and behavioral changes that result in greater efficiency gains on a continuing basis. Because SEM programs are separately addressed later in this memorandum, this section will address opportunities for residential behavioral programs.

Residential behavioral programs usually take one or more of the following three approaches:

1. The most prevalent approach to date is the **Home Energy Report**, which provides customers detailed data on their energy use. Details typically include comparison of each customer's usage to that of similar customers in the utility's service territory. This encourages customers to improve their performance relative to their peers. Several contractors specialize in administering Home Energy Report programs, including Opower, which currently operates programs in more than 30 states.
2. **Direct feedback programs** provide customers with real-time information on their energy use, so that customers can increase their awareness of their energy use patterns and explore how to reduce their bills. Customers must have enabling technologies, such as wireless enabled thermostats, to take advantage of feedback programs. Many feedback programs are also paired with dynamic pricing structures to enhance customers' incentives for using their enhanced information to control their energy use. For example, a pilot program conducted in two communities served by Wisconsin Public Service Corporation from 2011 through 2013 offered customers in-home smart thermostats as well as the option to enroll in time-of-use rates.

3. **Community-based programs** seek to create social incentives for reducing energy use. We Energies operated a community-based pilot in Burlington from 2010 through 2012. This pilot set a community-wide energy savings goal, supported the operations of a community task force devoted towards meeting the savings goal, and encouraged citizens to sign public pledges to reduce their energy use. Other community-based approaches include encouraging customers to post energy-saving achievements to social media sites and creating forums for customers to share energy-saving ideas.

Evaluation research suggests that behavioral programs can successfully achieve energy savings by changing customers' energy use practices, such as turning out lights in empty rooms or changing furnace operating schedules. In some cases, programs may also achieve savings by driving increased participation in incentive-based programs. Home Energy Report programs consistently achieve average savings from these effects of 1 to 3 percent of a customer's energy use. Some studies suggest that direct feedback programs can achieve greater savings, of at least 5 to 10 percent per customer. However, fewer large-scale evaluations of feedback programs have been performed and savings by program may be more variable than for Home Energy Report programs. For example, while Wisconsin Public Service Corporation's pilot achieved savings of up to 9 percent when customers combined feedback with time-of-use rates, customers in a 2010 direct feedback pilot conducted by the Energy Center of Wisconsin achieved savings of less than 2 percent. Community-based programs have received the least study to date. Participants in We Energies' pilot did not achieve statistically significant overall savings compared to similar individuals in a control community, although participants who signed public pledges did report taking more energy-saving actions.

It is less clear whether savings from behavioral programs persist over long periods of time. A few studies have suggested that Home Energy Reports achieve savings for up to five years as

long as reports continue to be delivered, and that reduced savings continue to be achieved for at least one year after delivery ends. However, the recent implementation dates of most programs have limited the amount of available evidence on Home Energy Reports, and still fewer studies have addressed persistence in direct feedback or community-based programs. Behavioral programs have been most commonly implemented in jurisdictions that measure energy savings on an annual basis, and consider persistence only as a secondary concern. Within Focus' life cycle framework, persistence will have a more significant effect on behavioral programs' ability to achieve savings goals.

Conducting and evaluating behavioral programs would also present new administrative considerations for Focus. First, the EWG agreed with industry experts and established program savings protocols that experimental designs are necessary to accurately evaluate behavioral program savings, primarily because other reliable methods do not exist for measuring changes in customer habits. Experimental designs will require any pilot program to utilize control groups that do not receive program benefits in order to compare their energy use with participants. They will also require pilots to be conducted on a relatively large scale to ensure the results have statistical validity. Home Energy Report evaluations have generally used customer populations of at least 70,000 or 80,000, divided evenly into experimental and control groups. Direct feedback pilots would require smaller populations, but studies to date suggest a need for populations of 35,000 or more. Second, most types of behavioral programs require direct and ongoing access to utility metering data in order to provide usage data through home energy reports or direct feedback technologies. Utilities' advanced metering infrastructure could offer the volume and quality of data needed, but Focus-administered programs would require development of arrangements for data transfer and privacy protection. Focus evaluation staff note that access to detailed, hourly

metering data could enhance the validity of its evaluation and perhaps even allow for statistically valid pilots conducted on a smaller scale than the sizes cited above. Finally, the data needs and required evaluation scale of behavioral programs suggest that the cooperation of at least one Class A IOU would be necessary to operate an effective pilot.

Commission Alternatives

Behavioral programs have achieved energy savings in a number of states across the country. However, questions still remain about the amount of savings those programs can cost-effectively achieve, particularly in the life cycle savings framework used by Focus. The Commission could choose to maintain the status quo and limit Focus' activities to the existing, incentive-based programs that have established records of achieving savings. Alternatively, the Commission could authorize Focus to allocate funding for pilot residential behavioral programs designed to measure achievable program savings and their persistence over time. This would allow the program to more closely review program experiences in other states and assess their potential long-term role within the Focus portfolio. If the Commission wishes to play a direct role in determining program scope and design, it could consider ordering the Focus Program Administrator to present pilot program designs for Commission approval. To ensure full and effective program operations, the Commission may also wish to consider ordering participating utilities to share all customer data necessary for program implementation and evaluation.

Alternative One: Focus funds should not be used for residential behavioral pilots during the quadrennium.

Alternative Two: Focus funds may be used for residential behavioral pilots during the quadrennium.

Optional Addition One: *The Commission shall approve the design of any pilots in advance of implementation.*

Optional Addition Two: *Utilities participating in behavioral pilots shall share all customer data necessary for implementation and evaluation.*

SECTION FOUR

Renewable Energy

Background

The Commission's 2010 Quadrennial Planning Process order required that the cost-effectiveness of renewable energy measures and programs be determined in the same manner as energy efficiency measures and programs. (PSC REF#: 141173.) The Commission has since issued several additional orders addressing renewable issues. An Order dated October 27, 2011, identified criteria for inclusion of renewable energy technologies determined not to be cost-effective, as measured by Focus' standard cost-effectiveness test, into the Focus program portfolios. These criteria are intended to capture additional attributes of renewable energy technologies, and include technical maturity, equipment maintenance considerations, production of primarily on-peak energy, creation of usable byproducts, and creation of ongoing jobs. (PSC REF#: 155515.) The Order also directed the Focus Program Administrator to review available renewable resource technologies against those criteria and propose a budget to capture eligible renewable resources.

In its Order of April 26, 2012, the Commission established an annual budget cap of $10 million for renewable energy incentives. In addition, the Order (PSC REF#: 163778) dictates that, starting in 2013, 75 percent of renewable energy program spending shall be for Group 1 technologies (biogas, biomass, and geothermal) that were measured to be more cost-effective

under Commission criteria and 25 percent spent on Group 2 technologies (solar thermal, PV, and wind) that were measured as less cost-effective. The Commission also ordered that Focus renewable energy spending cannot reduce Focus' portfolio of energy savings by more than 7.5 percent compared to an efficiency-only program, and that Focus shall maintain a program benefit to cost ratio of at least 2.3. Application of these criteria have resulted in the Program Administrator budgeting between $4 and $5 million for 2014 renewable energy programs.

Partly due to these revisions to program policies, Focus renewables programs have undergone several adjustments during the present quadrennium. The business and residential renewable energy programs were suspended temporarily in mid-2011 and early 2012, respectively. Before restarting the renewable energy programs, the Program Administrator developed separate budgets for awards to Group 1 and Group 2 technologies in order to comply with the Commission's August 2012 Order. Those budgets determine Group 2 funding based on the amount anticipated to be spent on Group 1 technologies, to ensure that Group 2 technologies are annually limited to 25 percent of overall renewable spending. The business renewable program restarted in late 2012 using a RFP process to select projects for funding. The residential renewable program restarted in July 2012 with different offerings and a reservation system in place to control anticipated high demand. The residential renewable program was again suspended temporarily in 2013 after the Program Administrator determined that additional rewards would likely cause Group 2 technologies to account for more than 25 percent of program spending in 2013. Part of the reason for this determination was that the longer project development times for Group 1 technologies made it unlikely that sufficient project expenditures would occur on completed Group 1 projects in in 2013 to allow continued funding of Group 2 technologies. The program

restarted in January 2014 without the project reservation system requirement and with a small business component that rewards small systems on commercial buildings.

The changes made to Focus' renewable energy programs have resulted in an overall decline in spending on renewable energy projects in the quadrennium. This trend may have been accelerated by the expiration of some federal incentives in 2011. However, renewable program cost-effectiveness has improved from a TRC of 0.82 in 2012 to 0.97 in 2013. This may be largely due to reduced spending on Group 2 technologies which typically are considered not to be cost-effective under present program evaluation methods. However, the 2013 evaluation found that one of the Group 1 technologies (geothermal) was not cost-effective, with a TRC of 0.87, while a Group 2 technology, solar PV, had a TRC of 1.12.

Analysis

Commenters raised several interrelated renewable energy policy issues for consideration by the Commission. These issues include:

- Whether Focus renewable programs should continue to prioritize cost-effectiveness, or set alternative priorities;
- The appropriate evaluation methods to be used for renewable energy measures and programs; and
- How Focus renewable energy programs can be designed to best reflect program priorities.

Renewable Energy Program Priorities

In its Order of April 26, 2012, the Commission determined that its priorities were to improve renewable energy program cost-effectiveness and limit the impacts of renewable energy programs on the overall cost-effectiveness of the Focus portfolio. The renewable energy programs were redesigned with these priorities in mind. As a result of program design changes, the

cost-effectiveness of the renewables programs has improved. Renewable energy programs in 2013 obtained 97 cents of benefits for every dollar in costs, compared to 52 cents of benefits in 2011.

Some public commenters expressed concern that the manner in which the Commission's renewable energy priorities are implemented disadvantages Group 2 technologies and limits Focus' spending on renewable energy projects. Spending on Group 2 technologies fell from $9.2 million in 2011 to $1.3 million in 2013. Renewable energy spending was about 23 percent of the $10 million cap in 2013 and is expected to be approximately 45 percent of the $10 million cap in 2014.

Several options exist if the Commission is interested in addressing these concerns. For example, the Commission could find it appropriate to set aside the current priority of increasing renewable energy program cost-effectiveness, while maintaining its goal to limit the effects of renewable spending on overall Focus cost-effectiveness. In this case, the Commission could require that renewable energy spending not reduce the cost-effectiveness of the Focus portfolio of energy savings by more than a specified percentage, but eliminate the 75/25 percent Group 1/Group 2 spending split. This would allow the Program Administrator more flexibility to allocate funding between technologies.

The Commission could also consider setting renewable energy priorities unrelated to cost-effectiveness. One priority suggested in public comments is to spend the full $10 million renewable budget cap annually. Setting this priority would be consistent with an emphasis on maximizing the adoption of renewable technologies. A similar priority, which could be set instead of or in addition to the spending requirement, could be to maximize the kW, kWh, and therm production through the renewable energy program. This priority would also encourage renewable energy adoption, while requiring the Program Administrator to prioritize technologies and projects

which achieve the greatest savings. If no spending cap for renewable energy programs is maintained, maximizing renewable energy production could result in substantial shifts in spending from energy efficiency programs to renewable energy programs.

Renewable energy priorities could also be set to be consistent with the Commission's priorities for the overall Focus program. If the Commission determines that Focus programs should be designed to achieve carbon reductions, it could also identify this as a priority for its renewable program. To implement this priority, Commission and Focus staff could develop a menu of program alternatives based on each renewable technology's carbon reduction profile and model scenarios based on final Commission decisions. Similarly, if the Commission wishes to increase Focus' emphasis on achieving on-peak energy savings, it could set the same priority for the renewables program. Under this priority, the mix of renewable technologies that achieve the greatest on-peak savings could be determined, and programs that offer different incentive levels for on-peak and off-peak kWh savings could be designed. The Commission could also consider using the renewable energy program as a pilot for program design that differentiates between on-peak and off-peak savings, and use the results to determine whether other Focus programs should utilize similar designs in the future. The Commission could consider setting emission reductions or on-peak production as the sole priority for the program, or combine them with the additional priority of annually spending the full renewables budget.

The ICG and the Joint Utilities support the current renewable program priorities and limits. Other public commenters identified other priorities that would encourage renewable programs to spend a greater percentage of the total renewable budget cap and more money on Group 2 technologies. RENEW indicates that the priority for renewable programs should be to develop sustainable markets for installing renewable technologies in Wisconsin in a manner that balances

resource acquisition and market transformation. The ELPC states that the Commission should de-emphasize its priority on renewable energy cost-effectiveness and set priorities consistent with the State Energy Priorities Law (Wis. Stat. § 1.12), which states that "noncombustible" renewable energy resources should be prioritized over "combustible" renewable resources whenever they are "cost-effective and technically feasible." This priority would require adjusting the current allocation of funding between Group 1 and Group 2 technologies because higher-funded Group 1 technologies include combustible resources, such as biomass and biogas, while Group 2 includes noncombustible solar and wind technologies. This non-combustible priority could be combined with an emphasis on minimizing the decrease on overall cost-effectiveness due to renewable energy programs, or on spending the entire renewables budget.

Commission Alternatives

Alternative One: Cost-effectiveness shall be Focus' primary priority for determining the appropriate mix of renewable energy offerings. It is appropriate to implement this priority by requiring that renewable energy spending not reduce Focus' portfolio of energy savings by more than 7.5 percent compared to an efficiency-only program, and maintaining a program benefit to cost ratio of at least 2.3.

Alternative Two: Cost-effectiveness shall be Focus' primary priority for determining an appropriate mix of renewables offerings. It is appropriate to implement this priority by requiring that renewable energy spending not reduce Focus' portfolio of energy savings by more than a Commission-specified percentage as compared to an efficiency-only program and/or Focus shall maintain a program benefit-to-cost ratio of at least a Commission-specified level.

Alternative Three: The priority of the Focus renewable energy programs is to maximize the production of renewable energy.

Optional Addition: *It shall also be a priority of the program to annually spend its entire budget.*

Alternative Four: The priority for the Focus renewable energy programs is to maximize total carbon reductions. Focus and Commission staff shall develop a menu of program alternatives based on each renewable technology's carbon reduction profile.

Optional Addition: *It shall also be a priority of the program to annually spend its entire budget.*

Alternative Five: The priority for the Focus renewable energy programs is to maximize on-peak energy production.

Optional Addition One: *It shall also be a priority of the program to annually spend its entire budget.*

Optional Addition Two: *Commission staff and Focus staff shall use the renewable energy programs as a pilot program to determine whether all Focus programs should implement similar priorities in the future.*

Alternative Six: The priority for Focus renewables programs shall be to achieve a balance between resource acquisition and market transformation.

Optional Addition: *It shall also be a priority of the program to annually spend its entire budget.*

Alternative Seven: The priority for the Focus renewable energy programs is to implement cost-effective and technically feasible noncombustible renewable technologies.

Optional Addition One: *It shall also be a priority of the program to annually spend its entire budget.*

Optional Addition Two: *It is appropriate to implement this priority by requiring that renewable energy spending not reduce Focus' portfolio of energy savings by more than 7.5 percent compared to an efficiency-only program, and Focus shall maintain a program benefit to cost ratio of at least 2.3.*

Cost-Effectiveness

The Commission's current policy of using the same methods to assess the cost-effectiveness of renewable and energy-efficient measures allows direct comparison of the impacts and cost-effectiveness from each group of measures. The Joint Utilities expressed support for the *status quo*. The ICG also stated that current policies should be continued, citing the improved cost-effectiveness achieved by the renewables program. Other public comments suggested a range of different approaches to cost-effectiveness.

Several commenters suggested that current cost-effectiveness practices should be modified to take into account all benefits achieved by renewable installations, citing benefits such as improved system reliability, improved air quality, economic development, minimized maintenance costs, fuel diversity, health benefits, and support for skilled jobs. Some—though not all—of these benefits are already included in Focus' cost-effectiveness tests, or accounted for in the analysis Focus used to identify Group 1 and Group 2 technologies. However, because the definition and measurement of these benefits involve numerous complexities, it also remains possible that reasonable observers may disagree on whether current practices fully and accurately assess those benefits. Commenters also stated that calculations would benefit from ensuring they use timely data and transparent methods that are shared to facilitate public input. If the Commission wishes to further review current practices for identifying and quantifying benefits, it could direct Commission staff to work with the EWG and other interested stakeholders to identify a revised

method for ensuring program cost-effectiveness methods account for all benefits from renewable technologies.

Other commenters, including Clean WI and the city of Milwaukee, suggested that renewable measures should not be screened for cost-effectiveness. Clean WI stated that cost-effectiveness screening cannot adequately account for unquantifiable benefits, and stated that shifting emphasis away from cost-effectiveness would be consistent with practices for Renewable Portfolio Standards, which do not require demonstration of cost-effectiveness.

The Commission should consider the priorities it sets for renewable programs in determining whether or how renewable cost-effectiveness should be assessed. If the Commission decides that cost-effectiveness should continue to be a program priority, it could maintain existing practices or direct the development of revised calculation methods. If the Commission sets other priorities, such as spending the available budget or maximizing savings or emissions reductions, it will need to determine whether cost-effectiveness screening remains necessary and valuable to assess program performance. If the Commission believes cost-effectiveness screening should still occur, it could also direct Commission staff to work with Focus staff and the EWG to develop new calculation methods that are consistent with its selected priorities. For example, if the Commission chooses to prioritize carbon reductions or noncombustible technologies, it would be appropriate to develop methods that deemphasize other benefits and provide detailed data to assess progress towards the specified priority.

Commission Alternatives

Alternative One: It is appropriate for Focus to use the same evaluation methods for renewable energy and energy efficiency measures and programs. The unique cost-effectiveness

attributes of renewables are reflected in the present division between Group 1 technologies (biogas, biomass, and geothermal) and Group 2 technologies (solar PV, solar thermal, and wind).

Alternative Two: It is appropriate for Focus to use the same evaluation methods for renewable energy and energy efficiency measures and programs. Commission staff shall work with the EWG and Focus stakeholders to identify a revised method for ensuring these methods account for the unique cost-effectiveness attributes of renewable technologies.

Alternative Three: Focus renewable measures and programs shall not be evaluated for cost-effectiveness.

Alternative Four: Commission staff shall work with Focus staff to develop new methods for evaluating the cost-effectiveness of renewable energy measures and programs that reflect the Commission's renewable energy priorities

Program Design

The program design element receiving the most comments is the 75/25 percent annual spending constraint between Group 1 and Group 2 technologies, respectively. As described in the background section, this design element has resulted in temporary suspensions of Group 2 incentives, and reduced overall renewable energy expenditures.

One option to address this issue, suggested by CUB, is to remove the Group 1 and Group 2 designations and allow the market to determine the most cost-effective mix of technologies. However, other market interventions, such as state and federal tax incentives, which are outside Focus' control, impact customer demand for renewable technologies without regard to Focus program cost-effectiveness. CUB added that another option could be to allocate the renewable energy budget between the two groups at fixed percentages of the renewable energy budget, such that spending on Group 2 technologies is not dependent on completion of Group 1 projects. An

additional option would be to apply the 75/25 spending split for the four-year period instead of an annual basis. This would allow for spending to continue on Group 2 technologies while Group 1 projects, which have a longer lead time, are being developed. When determining whether to retain the Group 1 and Group 2 designations, the Commission may want to consider that solar PV, a Group 2 technology, was cost-effective in 2013.

Retaining the 75/25 spending constraint is only appropriate if the cost-effectiveness of renewable energy measures and programs is a priority. However, even if cost-effectiveness is a priority, the 75/25 spending constraint could be removed if the Commission wishes to offer the Program Administrator more flexibility in program design and implementation, including the allocation of funds between technologies. Continuing to require that Focus renewable energy spending not reduce Focus' portfolio of energy savings by more than a certain percent compared to an efficiency-only program would maintain an emphasis on cost-effectiveness even with the removal of the 75/25 spending constraint.

Several public comments encouraged the design of better renewable energy programs to improve their cost-effectiveness. SOUL stated that promoting on-site solar arrays and selling power neighbor to neighbor are the most effective means ratepayers have to actually influence the market.

RENEW indicated that a revolving loan fund as a supplement to Focus rebates may improve program effectiveness. Experience with some loan programs within Wisconsin suggest they may face challenges in encouraging participation. Loan programs in Milwaukee and Madison for renewables and/or energy efficiency were not well subscribed. However, other loan programs have found greater success. Iowa has offered a renewable energy project loan program for several years. Under this program, zero interest loans are available for one-half of the project cost. About

240 loans have been approved over the program's life, with five defaults. The program approved about 30 loans in 2013. Nearly all were solar projects that also received rebates from Alliant Energy. RENEW stated that while the experience in Iowa indicates that loan programs can be effective, it also indicates that a loan program cannot substitute for rebates, noting Iowa's use of other program mechanisms such as a 15 percent state tax credit for solar and utility incentives.

Focus' current loan experience is in energy efficiency best practices via CleanTech Partners. One to four loans are closed annually at market interest rates. The payment of the loan is tied to the actual amount of energy saved. Therefore, if the measure does not perform or the company has a work slowdown, the monthly payment falls as well. Reduced interest rates have not increased activity, and low or zero interest rates make sustaining the loan fund impossible since defaults will occur.

Commission Alternatives

Budget Allocation

Alternative A. One: It is appropriate that no less than 75 percent, within a 5 percent range, of renewable energy program expenditures be for Group 1 technologies (biogas, biomass, and geothermal), on an annual basis/quadrennium basis, and no more than 25 percent, within a 5 percent range, be spent on Group 2 technologies (solar thermal, PV, and wind), on an annual basis.

Alternative A. Two: It is appropriate that 75 percent of the renewable program *budget* be allocated to Group 1 technologies and 25 percent be allocated to Group 2 technologies, such that up to 25 percent of the renewable program *budget* may be spent on Group 2 technologies, on an annual basis.

Alternative A. Three: It is not appropriate to budget or spend renewable energy dollars based on maintaining a set split between technology types.

Other Program Design Issues

Alternative B. One: Design of the renewable energy programs shall be the responsibility of the Program Administrator, consistent with the Commission's decisions in this docket.

Alternative B. Two: The Program Administrator and Commission staff shall work together, with input from interested stakeholders, to investigate design changes to improve program effectiveness, consistent with other Commission decisions in this docket.

Alternative B. Three: It is appropriate for Focus to design and implement a renewable energy loan program to supplement existing renewable energy rebates.

Alternative B. Four: It is appropriate for Focus to discontinue renewable energy rebates. Focus shall design and implement a renewable energy loan program.

SECTION FIVE

Budget - SEERA Designated and Undesignated Funds

Background

Act 141 established funding levels of the statewide energy efficiency and renewable resource programs at 1.2 percent of utility operating revenues, or roughly $100 million a year, with the opportunity for the Commission to request a higher level of funding. In December 2010, based on the Commission's recommendation, higher funding levels were approved by the Joint Committee on Finance, including a 2011 funding level of $120 million. However, in June 2011, the legislature passed 2011 Wisconsin Act 32 (Act 32) which repealed the higher funding levels set by the previous Joint Committee on Finance, and returned them to 1.2 percent of operating revenues beginning in 2012. Therefore, funding for energy efficiency and renewable resources

programs returned to approximately $100 million for 2012, 2013, and 2014, with approximately $86 million per year being available for business and residential programs.

When establishing the 2011 budget for Focus programs, three factors were taken into account. First, in December 2010, administration of Focus programs was rebid. As a result of this, the potential for a new Program Administrator beginning in early 2011 existed, along with the potential for the rebid of all program implementation. Commission staff anticipated that such a substantial change would cause a temporary slow-down in spending during the transition period. Second, when the 2011 program budget was being established, which was prior to the rebid, the existing Program Administrator reported approximately $36 million in obligations[11] that would need to be paid in 2011 or 2012. The Focus Fiscal Agent (Wipfli) and the Compliance Agent (Baker Tilly) recommended that SEERA and Commission staff account for these obligations when budgeting for Focus. Otherwise, as the financial audits indicated, Focus liabilities were greater than its assets. Finally, at the time the 2011 program budget was established, it was not known if the $120 million funding level approved by the Joint Committee on Finance would remain in place for 2011 or be rescinded.

Because the funding level was unknown, a $100 million base budget was assumed for 2011.[12] Commission staff also held back $14 million from the 2011 $100 million base budget to be used to cover a portion of the $36 million in estimated obligations. Then in the summer of

[11] Obligations refer to contracts with customers for the receipt of incentives when a project is installed/completed. Large projects can take up to 16 months from start to finish and therefore span from one calendar year to the next.

[12] Base budget refers to new dollars available for each program year. For program years 2012, 2013, and 2014, total revenue is approximately $100 million each year. Of this, approximately 4.5 percent pays for Program Evaluation; Fiscal Agent; Compliance Agent; Commission staff oversight; SEERA; consulting services; software; SPECTRUM development and maintenance; and depreciation. Approximately 9 percent of remaining dollars are allocated to CB&I for program administration covering energy efficiency and renewable programs as well as the Research Portfolio. The remaining dollars, approximately $86 million per year, constitute the program budgets (Business and Residential Programs).

2011, after Act 32 was enacted, Commission staff set aside the additional $20 million to cover the remainder of the estimated $36 million in obligations. Commission staff believed that the total obligations were less than the estimated $36 million. Commission staff reasoned that if a more reliable estimate was made by the new Program Administrator, any remaining dollars could be used for the anticipated program ramp up in 2013 and 2014, the last two years of the quadrennium.

Due to the above factors, in 2013 there was approximately $60 million in the SEERA fund that had not been budgeted. There are two decisions before the Commission regarding these funds. The first addresses the creation of a designated fund to cover outstanding incentive obligations and cash flow concerns, and the second decision addresses how to allocate the remaining undesignated dollars.

1. SEERA Designated Fund

In May 2013, after reviewing the annual Baker Tilly financial audit, SEERA, in conjunction with Baker Tilly, Wipfli, and Chicago Bridge & Iron (CB&I), conducted an analysis of Focus cash flow and historical levels of outstanding incentive obligations. The analysis indicated that with increased program activity and the associated increase in incentive payments to customers, program expenditures in some months were higher than the revenue deposited by utilities. This has not been a concern since 2011 because the dollars set aside by Commission staff could cover any shortfall. However, not having a designated reserve was an issue in 2010 when, as a result of high program demand, expenditures were anticipated to outpace revenues for the year and no dollars above the base budget were available. Several times during 2010, program offerings were eliminated or incentives reduced in order to ensure the program could meet its commitments through the end of the year. It is important to note that the effects of program changes can take several months to begin having an impact on the market. The result was that

even with the changes, it was necessary to hold some payments in December and process them in January.

Obligations are incurred as the normal course of managing an energy efficiency program. Many projects take 12 to 18 months to complete due to size, complexity, and customer capital budgets. However, in order to get approval from the corporate headquarters, the village board, or school board, a commitment that the incentives will be paid for completed projects is needed from the Focus program. Since 2012, projects have milestones and dates that are tracked in SPECTRUM. This allows the Program Administrator to know at any given point in time how much has been obligated and when it can expect to record the energy savings that count towards goal achievement. Because of the varied project completion times, the Program Administrator strives to keep this "pipeline" of obligations full in order to meet the four-year contract goals. To date, outstanding obligations are paid from the annual budgets in the year the project is completed. As long as Focus is funded and there are no funding reductions, there should be no risk that these obligations will not be paid. However, should the Focus program be defunded by the legislature or the funding formula reduce annual budgets, Focus may not be able to pay these outstanding customer obligations without a designated fund.

With the goal of addressing recommendations made by the Fiscal and Compliance Agents regarding cash flow and obligations, the SEERA Board approved a designated fund policy for Commission approval which states:

> It is the policy of SEERA and Focus on Energy that a designated fund equal to 30% of the prior year's actual revenue will be maintained to ensure adequate liquidity to meet on-going obligations. The amount of the designated fund will be set annually by the Fiscal Agent, once final budgets have been determined, in consultation with the SEERA Board, the Public Service Commission, and the Program Administrator. The designated fund will be segregated on the balance sheet and denoted as designated fund. If the funding is needed, the Fiscal Agent will alert the SEERA

> Board, Commission and Program Administrator. The SEERA Board will have responsibility to manage the designated fund, in consultation with the Commission.

Annual revenues have been relatively stable at approximately $103 million dollars (investor-owned and municipal electric and electric cooperative revenue combined) so 30 percent equates to approximately $30 million dollars. The 30 percent figure is based on the historical levels of outstanding obligations, with an additional amount for cash flow if needed. The December 31, 2013, balance sheet indicated approximately $21 million in outstanding obligations.

Commission Alternatives

Commission staff has developed three alternatives for Commission consideration. Alternative One is to approve SEERA's proposed policy designating 30 percent of the prior year's actual revenue to ensure adequate liquidity to meet ongoing obligations. This amount is appropriate should the Commission believe that historical obligation levels will continue and the Commission approves plans to spend the remainder of the undesignated funds (approximately $30 million.) This would avoid situations such as occurred in 2010 when programs were eliminated and incentives reduced, resulting in disruptions and uncertainty in the market. Alternative Two is to modify SEERA's proposed policy and reduce the designated fund amount to $20 million. This option would make more dollars available for programs. This decision is appropriate if the Commission believes that the Program Administrator should manage obligations below historical levels with a small cushion for cash flow. It should be noted that the Program Administrator has already reduced the "pipeline" of projects, and a direction to further reduce obligations will likely make it more difficult to meet goals. Alternative Three would set a designated fund amount at $16 million dollars primarily for cash flow purposes. This amount is approximately equal to two months of averaged Focus expenditures. This alternative assumes that outstanding obligations are not a risk since the chances of Focus being defunded or the funding

formula being reduced are small. CUB suggested this approach should adequately address the cash flow concern.

Alternative One: Approve SEERA's proposed designated fund policy of maintaining 30 percent of the prior year's actual revenue to ensure adequate liquidity to meet ongoing obligations.

Alternative Two: A $20 million designated fund is appropriate to cover outstanding obligations and cash flow needs for the Focus program.

Alternative Three: $16 million should be designated for cash flow purposes.

Alternative Four: Establish a different level for the designated fund.

2. Undesignated Dollars

The amount of undesignated dollars available is dependent upon the decision regarding the SEERA designated fund above. Since the maximum recommended designated amount is $30 million, for purposes of this discussion it is assumed that $30 million of the $60 million is undesignated and available for allocation. In October 2013, the Program Administrator requested that $15 million of these undesignated dollars be used for programs with demonstrated demand in 2014. The remaining funds would be distributed in 2015 and 2016 to slowly bring down the budgets and avoid market disruptions. However, the Commission determined it appropriate to address the spending of these funds during the second Quadrennial Planning Process.

Commission Alternatives

Commission staff, in conjunction with the Program Administrator, have developed several alternatives for Commission consideration. The Commission could release the $30 million in undesignated funds evenly over the quadrennium ($7.5 million per year). This would provide consistency across the four years while giving ratepayers additional opportunities to recoup dollars

contributed. Depending on the Commission's decisions in Section Two-Cost Effectiveness, benefit cost ratios would not change appreciatively for programs and approximately 10,000 additional customers annually could participate in Focus programs. The Program Administrator estimates that with this budget savings in each year of the quadrennium would be three percent higher than the 2013 achievement. Equity between customer classes would be addressed in the program design phase. If this alternative is chosen in conjunction with one or more additional alternatives, the funds remaining unallocated after funding other alternatives would be released evenly over the quadrennium.

A second alternative would be to release the $30 million over the first two years of the quadrennium. This alternative is consistent with CUB's comments that the Commission should immediately allow Focus to begin spending the down the funds so ratepayers who paid into the Focus program receive benefits from it. CUB also stated the need to prepare Focus to help meet federal carbon standards intensifies the need to spend the undesignated funds sooner rather than later. Specifically, CUB recommended that in 2014 Focus be allowed to spend the amount of undesignated funds on the Small Business program that the Program Administrator believes can reasonably be spent cost-effectively. CUB recommended the remainder of the unspent funds, minus a small amount to be held in reserve, be spent over the next two years.

A third alternative would be to allocate approximately $9.3 million to expand the Strategic Energy Management (SEM) Leaders pilot program. Focus' Large Energy User program has initiated this program. The program provides strategic energy management services for large energy users to enhance their continual improvement processes for energy efficiency and energy management. The current program is designed to help participants reduce energy intensity by 2 percent annually through: energy intensity model development to track intensity, establish

baselines and track reductions; facilitate formation or enhancement of a company Energy Team; provide technical subject matter experts; support development of a sub-metering plan so companies know where energy is being used; and providing loans and incentives that meet program requirements. The initial pilot is planned to run from April 2014 through December 2014, with 10 to 11 companies targeted to participate. In partnership with the DOE's Better Plants program, 54 companies in Wisconsin have committed to make significant energy intensity reductions. The Focus SEM pilot is targeting these plants in the pulp and paper, metalcasting, printing, healthcare, food processing, plastics, and water/wastewater. The number of participants was capped due to limited funding for this pilot. The maximum budget for the pilot is $330,000. Anticipated energy savings from the current pilot is about 9,000,000 kWh and 500,000 therms annually. The additional $9.3 million could assist in reaching an estimated 50 to 70 industrial customers. The Program Administrator estimates a benefit cost ratio of about 3.5 (based on current evaluation inputs).

Alternative Three raises questions of equity surrounding the allocation of program benefits to large energy customers. Act 141 froze payments of large energy customers at their 2005 levels and directs the Commission to annually adjust that payment level by the lesser of inflation or increases in utility operating revenue. In its 2011 evaluation of Focus, the Legislative Audit Bureau calculated that in 2010 this freeze collectively reduced Focus payments by non-residential large energy customers of the six largest utilities by $16.2 million.[13] The effects varied significantly by utility; for example, while large energy customers of Wisconsin Electric Power Company collectively paid nearly $6 million less than they would in the absence of the freeze, large energy customers of Alliant Energy collectively paid more, in part because several customers

[13] Legislative Audit Bureau, "*An Evaluation, Focus on Energy, Public Service Commission,* December 2011, pp. 20-23.

had significantly reduced their energy use from 2005 levels. Because statutes require each utility to contribute 1.2 percent of its total operating revenues, Focus collections for other business customers have been increased to make up the difference. Even though most large energy customers contribute less per unit of energy used than small and medium-sized businesses, Alternative Three would increase benefits to large customers. Although large energy users contribute less than $9 million to Focus, the 2014 Large Energy User program budget is $13.5 million, or 26 percent, of a total Business programs budget of $52 million. If $9.3 million in additional SEM pilot dollars is approved, this percentage would increase to 32 percent. In addition to equity between larger and smaller business customers, the 60/40 spending split between Business and Residential programs would be affected. In 2014, the base budget is 61 percent for Business Programs and 39 percent for Residential. With the additional proposed dollars for the SEM pilot, this split would be 63 percent Business and 37 percent Residential.

Alternative Four would allocate approximately $6.4 million to fund a dairy digester facilitation initiative. Because of the cost of bio-digesters, the 30 in Wisconsin are located on Concentrated Animal Feeding Operations with 800 to 5,000 dairy cows. However, the majority of the state's dairy cows are located on approximately 12,000 small to medium sized dairy farms. Barriers to digester adoption on these smaller farms include: (1) expense of installation; (2) no guaranteed buy-back electric rate; (3) fewer government grants and rebates; (4) system maintenance; and (5) time to recoup costs. The proposed initiative would attempt to reduce these barriers as well as investigate two possible opportunities which are: (1) formation of smaller farm cooperatives; and (2) feasibility and cost-effectiveness of a small farm digester that has been developed, but little information exists. After initial meetings as well as educational opportunities, it is anticipated that approximately 10 new digester projects would be developed during the

2015-2018 quadrennium with an average incentive of approximately $500,000. Given the long-term nature of bio-digester projects, most of the savings would not be achieved until 2017 or 2018. The Program Administrator estimates that these projects would have a benefit cost ratio around 1.0. Again, since this is a business sector program, the above mentioned Business-Residential split would get slightly wider, particularly if the Commission chooses Alternatives Three and Four. Alternatives Five and Six would be appropriate if the Commission wishes to select some combination of Alternatives One through Four. If the Commission would like more information on any of the alternatives before making a final decision on the undesignated funds, it could choose Alternative Seven.

Alternative One: Distribute the unallocated funds equally across the four years of the quadrennium.

Alternative Two: Release the $30 million over the first two years of the quadrennium.

Alternative Three: Approve funding for a two-year expansion of the SEM pilots for large energy customers.

Alternative Four: Approve $6.4 million in funding for one year for a dairy digester program.

Alternative Five: Approve one or more of the above alternatives allocating all of the $30 million undesignated funds.

Alternative Six: Approve one or more of the above alternatives allocating most but not all of the $30 million undesignated funds.

Alternative Seven: Direct Commission staff to further study one or more of the above proposals and submit results to the Commission for a final determination by September 30, 2014.

SECTION SIX

Goals

Background

Because setting and achieving goals is largely dependent on decisions made in earlier sections of this memorandum, this section will review those important variables with the understanding that the Commission will take up decisions on goals at a second meeting. Once the Commission determines the goals, it will decide whether to institute an overall energy goal with thresholds for kWh and therms.

In the first Quadrennial Planning Process, the Commission adopted four-year net annual electric energy savings goals of 1,816,320,000 kWh and net annual natural gas savings goals of 73,040,000 therms. The four-year net kW goal established in the SEERA Program Administrator contract is 335,000 kW. Also, in the first Quadrennial Planning Process, the Commission determined that net savings are the best method of quantifying savings because they reflect the true impact of energy efficiency and renewable resource programs. The Commission also determined that net savings should be used to determine the cost-effectiveness of programs, inform program design, and assist in developing public policy. When setting the four-year net annual goals, the Commission took the highest goal achievement do date, which was in 2009, and added 10 percent. This assumed that there would be increased efficiencies due to a restructured program with a new Program Administrator. Evaluation methodologies also changed which would most likely impact net goal achievement. Table 5 shows the key variables in place for the first quadrennium.

Table 5 Key Variables in Setting Goals for 2011-2014

Key Variables When Setting Goals	2011[14]	2012	2013	2014
Administration and Program Base Budgets	$77,574,981	$92,813,615	$92,813,615	$92,813,615
Cost Effectiveness Test	Modified TRC with Expanded TRC Every Two Years. UAT to guide program design.			
Carbon Value	$30/ton			
Avoided Costs	Three-year historic average of Locational Marginal Prices (LMPs) within the state	Uses LMP projections developed as part of MISO's Transmission Expansion Planning (MTEP) process to forecast avoided costs over a thirty-year timeframe.		
Discount Rate	2 percent			
Measure Lifetime, Degradation and Persistence of Savings	Effective Useful Lives (EULs) that reflect the estimated median number of years a measure can be expected to continue operating were assigned to each measure. After EULs were used to calculate the life cycle savings for all measures, a decay curve was to be applied to adjust calculated savings by an assumed rate of annual decay. Recognizing that assigning EULs and a decay rate required making uncertain assumptions about future performance, the Commission directed EWG to review measure life and degradation issues and recommend modifications.			
Resource Acquisition and Market Transformation	Set short-term resource acquisition goals with qualitative targets and directions to the Program Administrator to prioritize designs that simultaneously achieve short-term energy savings while targeting longer-term market changes.			
Emphasis of Business and Residential	60 percent Business and 40 percent Residential			
Renewable Energy	Renewable resource programs will be evaluated using the same tests used for energy efficiency programs.			
			Commission established an annual budget cap of $10 million for renewable energy incentives. In addition, the order (PSC REF#: 163778) dictates that, starting in 2013, 75 percent of renewable energy program spending shall be for Group 1 technologies (biogas, biomass, and geothermal) that were measured to be more cost-effective under Commission criteria and 25 percent spent on Group 2 technologies (solar thermal, PV and wind) that were measured as less cost-effective. The Commission also ordered that Focus renewable energy spending cannot reduce Focus' portfolio of energy savings by more than 7.5 percent compared to an efficiency-only program, and that Focus shall maintain a program benefit to cost ratio of at least 2.3.	

[14] This is the combined amount from the first four months of 2011 when the Wisconsin Energy Conservation Corporation was the Program Administrator and the last eight months after CB&I assumed the role.

With these variables in mind, the 2013 Focus Evaluation Report shows that CB&I has achieved 74 percent of the net kWh goal and 62 percent of the net therm goal going into the final year of the first quadrennium. CB&I is at 60 percent of the kW contract goal.

Framework for Commission Alternatives

The two largest determinants in the programs' ability to achieve goals are the available budget and the use of cost-effectiveness tests and their inputs. Several other decisions that the Commission is considering in this second Quadrennial Planning Process could also impact goal achievement, including its decision on the role of Focus in meeting federal carbon standards. As Table 5 showed the key variables for the current quadrennial goals, Table 6 shows the key variables that need to be considered when setting goals for the next quadrennium with a brief explanation of how each variable affects the goal-setting process.

Table 6 Key Variables When Setting 2015-2018 Goals

Key Variables When Setting Goals	2015	2016	2017	2018
1) Base Revenue	$100 million	$100 million	$100 million	$100 million
2) SEERA Designated Fund	TBD	TBD	TBD	TDB
	May be able to set higher goals if the Designated Fund is less than 30 percent of previous year's revenue ($30 million).			
3) Plan for Undesignated Funds	TBD	TBD	TBD	TBD
	Although releasing the undesignated funds should result in increased goals, level of increase is dependent on the specific allocations of these funds to programs.			
4) Role of Focus in Positioning Wisconsin to Meet Federal Carbon Standards	TBD			
	If Focus is to play a role in meeting federal standards, other decisions need to be consistent with this goal.			
5) Emphasis between Energy and Demand	TBD			
	Energy savings directly achieve carbon reductions, while demand savings do not.			
6) Value of On-peak Versus Off-peak Energy Savings	TBD			
	On-peak savings have a higher value than off-peak savings. However, for carbon reduction, off-peak savings are at least as valuable as on-peak savings.			

Key Variables When Setting Goals	2015	2016	2017	2018
7) Cost Effectiveness Test	TBD			
	Cost-effectiveness tests that include the cost of avoided emissions, including carbon, reflect the use of Focus to meet emissions standards. The RIM test measures short-term impacts on rates for non-participants. Its use as the primary test is inconsistent with Focus' life cycle framework and the use of Focus to meet federal carbon standards			
8) Carbon Value	TBD			
	A carbon value that reflects the long-term value of carbon reductions is consistent with a life cycle framework and the use of Focus to meet federal emissions standards. A small or zero carbon value is consistent with a belief that the costs of meeting any future federal carbon standards are likely to be small.			
9) Avoided Costs	TBD			
	The use of forward-looking avoided costs is consistent with the use of Focus to meet federal carbon standards and also consistent with Focus' life cycle framework.			
10) Discount Rate	TBD			
	A societal discount rate would be consistent with Focus' role in meeting the societal goal of carbon reduction. Use of the utilities' weighted cost of capital as a proxy for the discount rate allows direct comparison between the demand and supply options if it is determined that there is no difference in risk between these options			
11) Measure Lifetime, Degradation and Persistence of Savings	TBD			
	It is important to continue to improve data and methods to accurately document savings that are intended to be part of a plan to meet federal carbon standards.			
12) Resource Acquisition and Market Transformation	TBD			
	Greater emphasis on longer-term market transformation activities may mean fewer energy savings in the short-term.			
13) Emphasis of Business and Residential	TBD			
	While the gap has closed, Business programs deliver more savings and are more cost-effective than Residential programs.			
14) Energy-Water Nexus	TBD			
	Could claim slightly more energy savings if approved (~1%).			
15) Should Focus Receive Credit for Code Changes	TBD	TBD	TBD	TBD
	Focus may be able to claim additional savings in 2017 and 2018 if approved.			
16) Pilots for Behavioral Programs	TBD	TBD	TBD	TBD
	Behavioral programs may result in additional savings in later years depending on scope of pilot(s)			
17) Renewable Energy	TBD			
	Commission decisions on renewable energy priorities, appropriate evaluation methods, and program design will all impact not only the level of savings achievable by renewable energy programs, but also achievable energy efficiency savings.			

Once the Commission has made decisions on issues in Sections One through Five at its initial meeting, Commission staff will be better able to develop more specific alternatives for Commission consideration at its second meeting.

Overall Energy Goal Rather than Specific Goals for kWh, kW, and Therms

In a memorandum dated October 7, 2013, Commission staff outlined the concept of an overall energy savings goal rather than specific goals for kWh, kW, and therms. (DL: 874021.) Under this concept, minimum thresholds for kWh and therm savings are established. However, the overall Commission-established goals would be set in Btus, a general measure of energy use, which would allow the Program Administrator to reach the overall goal for the quadrennium using any combination of therms and kWh above their minimum thresholds. This new approach would allow the Program Administrator flexibility with program planning in order to deliver programs as cost-effectively as possible. The Commission determined that the exchange rate proposed for 2014 was a sensible response to concerns regarding the difficulty in achieving therm savings with the current low natural gas prices. In approving the Quadrennium Planning II scope in December 2013, the Commission stated that overall savings goals were worth further consideration as a way to help the Program Administrator respond to changing market factors.

Commission Alternatives

Three alternatives are presented for Commission consideration. Should the Commission wish to reiterate its decision from October 2013, it could choose to require minimum levels of kWh and therms achievement, but set an overall energy savings goal that reflects these minimum achievements, plus additional achievement from any combination of kWh and therm savings. Alternative One would set minimum levels of kWh and therms achievement equal to 90 percent of the overall goal, leaving 10 percent to be achieved from any combination of savings. Alternative

Two would set minimum levels equal to 80 percent and leave 20 percent to be achieved from any combination of fuels. These alternatives are consistent with comments provided by the Joint Utilities, the city of Milwaukee, and Clean WI, which generally support the idea of an overall energy goal, but state that minimum thresholds are necessary to maintain equity in benefits between electric and gas customers.

Two issues need to be kept in mind when determining the appropriateness and design of an overall energy savings goal. First, the Commission needs to be mindful of the potential to increase cross-subsidization between electric ratepayers and gas ratepayers. The Joint Utilities state that they generally support actions that add flexibility to the Focus program in ways that enable the Program Administrator to adapt quickly and efficiently to market factors and remain as cost-effective as possible with ratepayer dollars, but stated that a moderate but limited "therm to kWh exchange" option could ensure Focus maintains a full menu of options available to all customer segments. Second, a statutory objective of the Focus program is to address market barriers to energy efficiency, an objective that will be detracted by an overall energy goal. Low natural gas prices are a perfect example of a barrier to participation. Therefore, the Joint Utilities also stated that the program should review the Program Administrator performance incentive structure to ensure that the performance incentives do not conflict with the goals of quadrennium planning or Act 141. While CUB stated that it does not recommend the establishment of an overall energy savings goal, should the Commission determine to set an overall goal, minimum savings levels for natural gas and electricity should be established and only a small portion of the goal (10 to 20 percent) should be at play for the exchange of natural gas and electric savings.

Alternative Three would be for the Commission to set kWh, therm, and perhaps kW goals (depending on its decision on energy savings and demand) and not set an overall energy goal. This

alternative is supported by ACEEE and SOUL. ACEEE believes that Focus should continue to have specific goals for kWh, kW, and therm savings through improved customer end-use efficiency because that has been the objective of Focus and should remain so. ACEEE also stated that it is not clear what advantages there would be to moving to an overall energy goal. ACEEE believes an overall energy goal could raise more complicated issues associated with fuel switching; combined heat and power systems; alternative fuels; and thermal equivalents of renewable energy sources such as hydropower. Should the Commission choose this option, Commission staff will develop specific options for goals based on decisions made in Sections One through Five. These options will be discussed and decisions made at a second meeting.

Alternative One: Establish an overall energy savings goal. Minimum kWh and therm thresholds will be set equal to 90 percent of the overall goal.

Alternative Two: Establish an overall energy savings goal. Minimum kWh and therm thresholds will be set equal to 80 percent of the overall goal.

Alternative Three: Do not establish an overall energy goal and keep specific kWh, therm, (and maybe kW) goals.

RDN:CAS:JAS:jlt:DL: 00924646

Key Background Documents
Order (signed 11/9/10 - mld 11/10/10) - PSC REF#: 141173
Order (signed & mld 10/27/11) - PSC REF#: 155515
Order (signed & mld 4/26/12) - PSC REF#: 163778
Order (signed 6/18/12 - mld 6/20/12) Callisto dissents - PSC REF#: 166932
Notice of Investigation and Request for Comments signed and served 7-3-13 - PSC REF#: 187137
Order (signed 1/9/14 - served 1/10/14) - PSC REF#: 197255
Request for Comments (signed & served 1/30/14) - PSC REF#: 197869
9501-FE-116_Focus Exchange Rate and Budget v4_0 with CAS comments.pdf - DL: 874021

APPENDIX A

PSC REF#: 200324	CETF Comments on Quadrennial Planning Process
PSC REF#: 200379	City of Milwaukee Office of Environmental Sustainability Comments on Focus Quadrennial Planning Process II (3-14-14)
PSC REF#: 200386	Clean Wisconsin's Comments Regarding the Quadrennial Planning Process II
PSC REF#: 200397	Comments from Environmental Law & Policy Center
PSC REF#: 200318	Comments of ACEEE
PSC REF#: 200392	CUB Comments in Response to January 30, 2014 Request for Comments
PSC REF#: 203501	Evaluation Work Group Comments
PSC REF#: 200394	Industrial Customer Groups Comments
PSC REF#: 200355	Joint Comments of WUA, WPPI & MEUW on Quadrennial Planning Process II
PSC REF#: 200328	Opower Comments on Quadrennial Planning Process II Scope
PSC REF#: 200349	Public Comment by Elizabeth Ward
PSC REF#: 200345	Public Comment by I. Nahm
PSC REF#: 200399	Public Comment by SOUL of Wisconsin
PSC REF#: 200483	Public Comment by Todd Timmerman
PSC REF#: 199626	Public Comment by William "Butch" Johnson
PSC REF#: 200367	RENEW Comments on Quadrennial Review Request for Comments